



B. L. D. E. Association's

S. B. ARTS & K. C. P. SCIENCE COLLEGE, VIJAYAPUR

First

INTERNAL TEST 2023 -2024

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Roll No./ಸ್ಥಳಾಂಕ : 0099 Date /ದಿನಾಂಕ : 06-01-2024

Subject/ವಿಷಯ : Computer

Semester/ಸೆಮಿಸ್ಟರ್ : 1st Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ : _____

Invigilator's Signature / ಕೂರಿದ ವೇದಿಕಾರಕರ ಸಹಿ

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25/30

Part I

Q1.

Ans 1. Computer is an Electronic device which takes input from the user and perform ^{it} its given task and gives an accurate output.

Q3.

Ans 3. The different types of language are:-

- 1) High language :- Human understanding language.
- 2) Machine language :- Machine understanding language.
- 3) Assembly language.

Q4.

Ans 4. Keyword are the Reserved words which can't be used as a variable such as int, printf, for, while etc.

Q5.

Ans 5. The two library functions in C are
i) Math.h function :- which is used to do all the mathematical calculations such as finding square roots of Quadratic equation, etc.
ii) Stdio.h function :- which is used to do the basic program's such as calculations, printing, etc.

Q 6.

Ans 6. The different operators in C are:

- 1) Arithmetic operator:- This operator is used to perform the simple calculations as $a+b$, $a-b$, a/b , $a\%b$, $a*b$.
- 2) Logical operator:- This The AND, OR and NOT are the logical operator in C.
- 3) Assignment operator:- The "=" is the Assignment operator which assign the values of the variable such as $a=5$, $b=9$, etc.
- 4) Comparison operator:- The operator's which are used to compare the values between, the operator's are $=$, $>$, $<$, $!=$, etc.

Part II

Q 1.

Ans 1. The Computer is an electronic device which takes user input stores it and process it's Command and gives a accurate output.

The father of Computer is "Charles Babbage" who invented the Computer. The size of the Computer was so large and it was slow. The Computer has 5 generations. Now we are using 5th generation comp.

* The characteristics of Computers are

- 1) It is used in the field of research and education. It gives the accurate result for it's given task.
- 2) It perform all the Arithmetic functions and all the task in very less time. It is fast.
- 3) It consist of CPU which is known as brain of Computer. It stores our data.
- 4) It consist of both Input and output device like Monitor, Mouse, Keyboard, etc.

Q3.

Ans. The Data Types in C are :-

- 1) Integer (int) :- It stores the numeric values in it. It takes 2 bytes to store the value. Ex:- 2, 4, 6, 7... etc.
`printf("%d", var);`
- 2) Float :- It stores the fractional values upto 7 decimal point. It takes 4 bytes to store the value.
 $a = 4.987$, $b = 0.999$, $c = 6.3333$... etc.
`printf("%f", var);`
- 3) Double :- It stores the fractional values upto 15 decimal points. It takes 8 bytes to store the value.
 $a = 9.88888$, $b = 6.394321$... etc.
`printf("%lf", var);`
- 4) Character :- It stores the alphabetic character's in it. It takes 1 Byte to store the value.
 $a = 'b'$, $c = 'd'$... etc.
`printf("%c", var);`
- 5) Boolean :- It only stores the true or false values. It takes 1 bit to store it.

True or false

Part III

Q2.

Ans2. For loop in C programming language.

For Syntax for For loop

<Syntax>

```
for (initialisation; condition; increment/decrement)
{
    operations
    Statement
}
```

Example:- Program for printing natural number's.

```
#include <stdio.h>
```

```
int main()
```

```
{
    int i, n;
```

```
    printf("Enter the n value");
```

```
    scanf("%d", &n);
```

```
    for (i = 1; i <= n; i++)
```

```
    {
```

```
        printf("%d", i)
```

```
    }
```

```
}
```

in for loop

In this program 'i' has been initialized as 1 and the condition is that 'i' value should be less than or equal to the value of n. If it's true then it will move ~~to~~ inside the for loop and print the value then it will go back and increment the 'i' value by +1. The loop will run until the for loop condition ~~is~~ becomes false.

If we will take the value of $n = 5$

The output of the program is 1 2 3 4 5

If $n = 10$

output = 1 2 3 4 5 6 7 8 9 10

Q3.

Ans3. Programming using Switch Case:

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
int a, b, c;
```

```
printf("Enter the value of a and b");
```

```
scanf("%d %d", &a, &b);
```

```
printf("1. Add, 2. Sub, 3. Multiply, 4. Div");
```

```
switch (case)
```

```
{
```

```
Case 1:
```

```
c = a + b;
```

```
printf("The Addition of a and b = %d", c);  
break;
```

```
Case 2:
```

```
c = a - b;
```

```
printf("The Subtraction of a and b = %d", c);  
break;
```

```
Case 3:
```

```
c = a * b;
```

```
printf("The Multiplication of a and b = %d", c);  
break;
```

```
Case 4:
```

```
c = a / b;
```

```
printf("The Division of a by b = %d", c);  
break;
```

```
Default:
```

```
printf("Enter a valid number");
```

```
break;
```

```
}
```

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Part - I

Q 1. Loop

Loop are used in C programming when there is repeat of execution in the statement.

Types of loop

1. for loop 2. Do while loop 3. while loop

Q 2. Function in C

1. The function without arguments and without return value.

2. The function with arguments and without return value.

3. The function without arguments and with return value.

4. The function with arguments and with return value.

Q 3. Array

Having homogenous element data is called Array

Q 4. 1. Array

Ex: `int num[10]` [datatype, array name [size]]

2. Two dimension array

Ex: `int num[10][5]` [datatype array name [row size] [column size]]

Q 6. Pointer

Pointer is variable used to hold address of another variable.

Pointer Type, Declaration and Initialization

Part - II

Q 1. For loop

For loop is used to control the flow of list of statement in block of codes base on condition

Example:

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
int i, n, j;
```

```
printf("Enter value of n");
```

```
scanf("%d", &n);
```

```
for (i = 0; i <= n; i++)
```

```
{
```

```
for (j = i; j <= i; j++)
```

```
printf("*");
```

```
}
```

```
printf("\n");
```

```
return;
```

```
}
```

for loop

for (initialization, condition, Increment/decrement)

Q 2o difference between while and do-while loop

1o while loop

stx

```
while (condition) {
}
```

2o do while loop

do {

stx

```
while (condition) {
}
}
```

- while loop is used "repeat" the execution of statement while condition is true.
- do while is also same like while loop but do while checks the before condition.

Part - III

Q 2. Pointer Declaration and Initialization is

* Initialization

& Declaration

→ * Initialization holds value

→ & Declaration ^{holds} address of ~~the~~ value.

Initialization

Declaration

int * p * q

int a = 10;
& a = 10;

code for pointer

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
int c, a, b
```

```
int *p, *q
```

```
&a = 10;
```

```
&b = 20;
```

```
c = *p + *q;
```

```
printf("value of c is %d", c);
```

```
}
```

```
&a = *p;
```

```
&b = *q;
```

```
c = *p + *q;
```

```
printf("value of c is %d", c);
```

```
}
```

Q3. Category of Functions

There are two types category of function are there

1. Function without argument and without return value.

2. There is no data transfer between calling function and called function.

2. Function with argument and without return value.

but there is no data transfer between calling function and called function.

3. Function with argument with return value
also there no data transfer between calling
function to the called function.

4. Function without argument with return value
but there no data transfer between calling
function to the called function.

```
#include <stdio.h>
int main()
{
    int sum(), a, b;
    printf("Enter the value a, b");
    scanf("%d %d", &a, &b);
    int void()
    {
        sum = a + b;
        printf("sum of a, b is %d", sum);
    }
}
```



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II

INTERNAL TEST 20 -20

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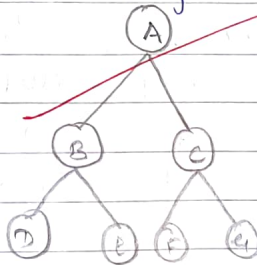
I. 1) Queue :- Queue is a linear data structure
* It has only two ends front and rear end.

* We can insert element from front end and delete element front end.

* Circular queue :- It is a type of queue in which rear end and front end are connected at a position and the element front is in the loop.

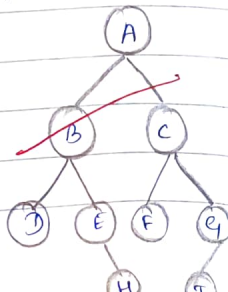
2) Degree of a node in tree :- The number of subtree present in a root node is called Degree of a node.

Ex :-



6) Binary tree :- A binary tree is a finite set of data items which is either empty or consist of a single item called root & disjoint binary tree is called the left subtree and the right subtree. Maximum degree node of any node is must two.

Ex :-



PART = II.

17. Stack :- stack is a non-primitive linear data structure in which elements are inserted and deleted at the same end.

Representation of stack :-

We can represent the stack in the computer memory by using either the static representation or dynamic representation.

* The static is called array.

* The dynamic is called linked list.

Operators on stack :-

① Push operator :- Inserting the element into the stack operator. If it is not empty we can't insert the elements. In this operator first we check maximum size of the operator, if it is full we cannot insert any data elements in it. If it is not full we can insert element into the operator.

Program :-

```
void (int x)
{
    if (top == maxsize - 1)
    {
        printf("Stack is overflow");
        return;
    }
    top = top + 1;
    stack[top] = x;
}
```


2) pop operator :- Deleting the element ~~at~~ from the stack.

Program :-

```
int POP ()
```

```
{
```

```
if (top == -1)
```

```
{
```

```
printf ("stack is under flow");
```

```
return;
```

```
}
```

```
return (stack[top]);
```

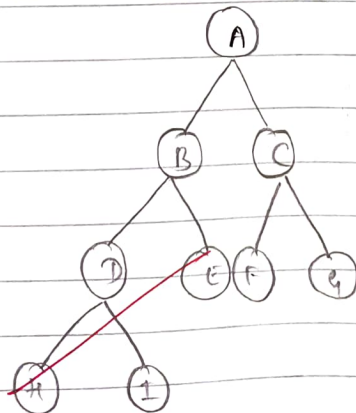
```
top = top - 1;
```

```
}
```

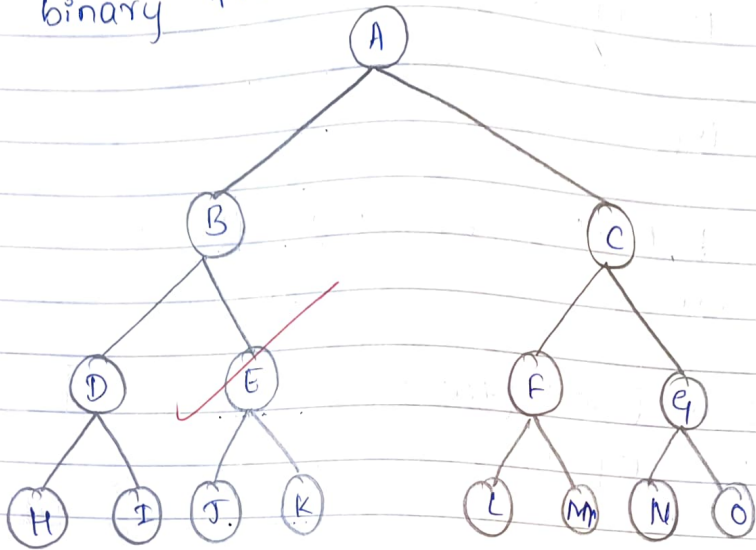
2) Heap tree :- A binary tree which n nodes and of depth D is say to be heap tree if it satisfy following conditions.

i) Each node in a tree is either at level D or $(D-1)$.

ii) If any node in a such a tree has a right descendent at level D . then all the left descendent of that node also appear at level D .

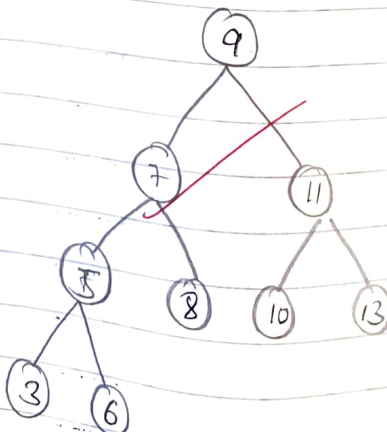


Complete Binary tree :- In a complete binary tree is exactly One node at level zero. Two nodes at level one. Four nodes at level two and so on. A Binary tree with n node of dept 19 is a strictly binary tree.



Binary search tree :- A binary search tree that is properly that all data element in the left subtree of node n are less than the contents of node n all elements in a subtree of a node n are greater than or equal to to the contents of node n .

Ex :- 9, 7, 11, 5, 8, 10, 13, 3, 6



ary

② Pre-order traversal.

* Visit the root node

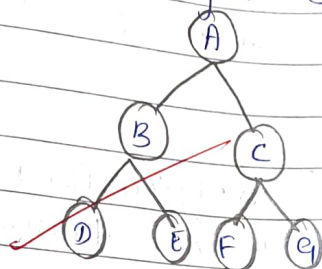
* Traverse the left subtree in pre-order

* Traverse the right subtree in post-order.

Ex. Root

left

right.



ABDECFG.

③ Post Order traversal.

* Traverse the left subtree in post-order.

* Traverse the right subtree in post-order

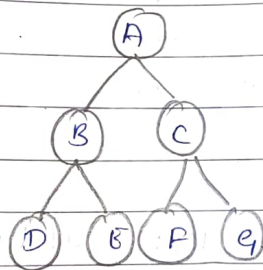
* Visit the root node.

ex:-

left

right

root



DEBFQCA.

PART-I.

⑤ Recursion :- It is a function which call itself.

* It uses selection structure such as if or switch.

* Executes slowly.

* It is not used in memory ~~allocation~~ execution.



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Part - I

Q1: A data structure in a computer science is a way to storing data in computer so that it can be used efficiently. It is a mathematical and logical concepts of data.

Q5: Primitive Data structure: These are the basic data types which directly manipulated by machine instruction.

* Non primitive: These are derived from primitive data structure are types which can not be manipulated by machine instruction.

Q2: Array: It is a collection of data element.

Q4: Searching: These several search techniques are available. Some of them are slow some of them are faster.

Sorting: Arranging the elements into particular order either ascending or descending.

Q6: Types of searching techniques

- 1) Linear Searching
- 2) Binary Searching
- 3) Interpolation Searching
- 4) Tree Searching
- 5) Index sequential Searching
- 6) Hashing Searching

Part III

Q1 Advantages of linear search

- i) Very simple to understand
- ii) Easy to employment
- iii) elements are unordered.

Disadvantages:

- i) It takes more time when array size is large.
- ii) If the elements are stored in sorted and then it is not efficient.

Q2 Sequential Search

- * It not necessary to sort the number elements
- * It takes more time when it is large
- * It is easily to represented in array and linked list
- * number of comparisons are more

Binary Search

- * It works only sorted elements
- * It takes less time for searching.
- * Easily represented in array not in linked list
- * number of comparisons are less

Part I

Q3 → Linear data structure :- It is only one success and one predecessor which shows logical relation between the element.

Ex: array, stack

Non linear data :- It have only one successor & more predecessors.

Ex: P. Tree, graph.

Part II.

3

- 1) Creating : Create means reserving memory for programming elements.
- 2) Inserting : Inserting a data elements from data structure.
- 3) Deleting : Deleting data elements from the data structure.
- 4) Selecting : Accessing of data elements with the data structure.
- 5) Updating : modify to content of data structure.
- 6) Sorting : Arranging all data element in a data structure.
- 7) Searching : Find the particular elements from the data structure.
- 8) Merging : Combining a data elements from data structure list of differenced list.

Q1. Internal Sorting : If all the records to be sorted are present in the main memory then the such a sorting is called Internal Sorting.

External Sorting : If some of the records to be stored or kept on second arrangement is called external sorting.



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INTERNAL TEST 2023 -2024

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Q.No.I

Q1) JAVA :- JAVA is a Object oriented Programming language by Sun micro System of USA in 1991.

* Java is helps to develop the Software.

Q2) James Gosling is invented the Java in 1991.

Q3) Java Compiler is break the line of codes in as text (words) as smaller unit is known as tokens in Java.

- Q4)
- 1) Math. abs()
 - 2) Math. Pow()
 - 3) Math. round()
 - 4) Math. min()
 - 5) Math. max()
 - 6) Math. Sqrt()
 - 7) Math. Cbrt()

Q5) Array :- Collection of Homogeneous elements, is called Array. we want store the ^{same} values in single location.

In this Array there are 2 types:

- 1) one-dimensional array
- 2) Two-dimensional array

(i) One-Dimensional array -> it contains only one Subscripts to store the values in array size.

② Two-dimensional array:- Two dimensional arrays are indexed by 2 subscripts.

Q.6) Method overloading:- it is a type of static polymorphism. repeatedly in method using the same functions with different parameters. is known as method - overloading.

Q.No-II)

Q1) Structure of Java Program:-

Java p has some sections :

Documentation Section
Package Statement
Import Statement
Interface statement
Class definition
Main re class method
{
main method definition
}

1) Documentation Section:-

- * This documentation section includes set of comment lines.
- * it include the name of the program author & other details.

2) Package Statement:- It is.

- * It is allowed first statement in Java file.
- * It has name of the Package.
- * Ex:- `Package Student;`
- * It is optional in Java.

3) Import Statement:-

- * Import statement is same as #include in 'C'.

4) Interface Statement:-

- * It is like a class.
- * It declares the methods.
- * It is optional in Java.

5) Class definitions:-

- * It is primary and essential elements in Java.
- * Class is used to map the objects.

6) Main Class method:-

- * It creates the objects in various type.
- * Initial part of Program.

Q2) Java Operators:-

- 1) Arithmetic operators
- 2) Relational operators
- 3) Logical operators
- 4) Assignment operators
- 5) Increment/decrement operators
- 6) Conditional operators
- 7) Bitwise operators
- 8) Special operators

i) Arithmetic operators:-

This operators used to perform mathematic expressions/operations.

Ex:- $+$ $\rightarrow$ Addition

$-$ $\rightarrow$ Subtraction

$\div$ $\rightarrow$ division

$*$ $\rightarrow$ multiplication

Expression:- $a+b$, $a*b$, $a+b \div c$.

2) Relational operators :-

These operators can help in relating between two quantities or operands

Ex :-
 $<$ $\rightarrow$ less than
 $>$ $\rightarrow$ greater than
 $<=$ $\rightarrow$ less than or equal to
 $>=$ $\rightarrow$ greater than or equal to
 $=$ $\rightarrow$ equals to
 $!=$ $\rightarrow$ not equals to

Expression :- $a < b$, $a \geq b$, $c != d$. etc.

3) Logical operators :-

Java supports 3 logical operators

these are;

$\&\&$ $\rightarrow$ logical AND
 $\|\$ $\rightarrow$ logical OR
 $!$ $\rightarrow$ logical NOT

4) Assignment operators :-

These operators are used to assign the value to the variables.

Ex :- $a = a + 1$ op $V = (exp)$

5) Increment/decrement operators :-

These are helpful to increase or decrease the value of variables.

increment $\rightarrow ++$

decrement $\rightarrow --$

Ex :- $m++ \Rightarrow m+1$

$m-- \Rightarrow m-1$

6) Conditional operators :-

These operators are used to check the condition.

Ex :- $a \geq 10$, $b \geq 20$

$\Rightarrow (a > b) ? a : b$

7) Bitwise operators :-

These operators used to test ^{the} bits

& → Bitwise And

| → Bitwise OR

>> → Right shift

<< → left shift

8) Special operators :-

These operators are ^{used in} special in ^{some} cases

In this we have two types

1) Instance of operator

2) dot operator (.)

Q.No - III

Q2) Simple program to display message.

```
import java.*;  
class Sim Welcome  
{  
    public static void main (String args[])  
    {  
        System.out.println("Welcome to Java lab");  
    }  
}
```

Q2) In looping statements we have mainly 3 types.

1) For loop

2) while loop

3) do while loop

① For loop :- we use this to control the flow of program statements
it gives result until the condition statement is false.
it is a entry controlled loop.

Syntax :-

```
for (initialization; condition; increment/decrement)
{
    body of the loop
}
```

② while loop :-

it is also same as for loop it is entry controlled loop. it will give result until condition is satisfied. first check the condition then execute the statement

Syntax :-

```
initialization;
while (condition)
{
    body of loop
    increment/decrement
}
```

③ do-while loop :-

it is an exit controlled loop. first it execute the statement at least once then it will check the condition.

Syntax :-

```
initialization;
do
{
    body of loop
}
while (condition);
```

Q3) types of token in Java

Java supports 6 types of tokens they are;

- 1) Key words
- 2) Identifiers
- 3) Literals/variables
- 4) Operators
- 5) separators
- 6) Comments.

1) Keywords :-

- * These are the predefined words of any programming language.
- * They have special meaning and fixed meaning.

2) Identifiers :-

- * these are used to identify the values, variables, constants.
- * these are read by users

3) variables :-

- * variables are the identifiers which have the values in during the execution of program
- * this value is not fixed.

4) Operators :-

- * These are helps to operates or perform between 2 operands.

5) Separators :-

- * use to separate the values.

6) Comments :-

- * These are the set of comment lines used / present in the documentation section, in Java.



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INTERNAL TEST 2023 - 2024

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Invigilator's Signature / ಕೋರಡೆ ಮೇಲ್ವಿಚಾರಕರ ಸಹಿ Signature of Evaluator / ಪರೀಕ್ಷಕರ ಸಹಿ Marks obtained / ಪಡೆದ ಅಂಕಗಳು

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Q.NO1

a) Inheritance -

Inheritance is mechanism in java by which one class is allowed to inherit the features to another class.

Syntax- class subclass - name extends Superclass - name
 {
 // method fields
 }

e) Java uses for this keyword

i) It can be used for invoke current constructor method

ii) It can be used for current class instant from the method.

iii) It can be used for refers class instant variable.

iv) It can be passed argument in the constructor call.

v) It can be passed in the method call.

c) Polymorphism which exists in execution time is called polymorphism.

In greek poly means many & morphism means form. It has many forms.

b) Dynamic binding It follows the runtime polymorphism Binding resolved in runtime by JVM is called Dynamic Binding
 Ex - Dynamic, public.

dy Constructor - It is special ~~class~~ type same
it has same name as class name. It can't
have return type.

Syntax - (class name)

```
{  
  class name()  
  {  
    ---  
    ---  
  }  
}
```


a) Overriding

- * It is the child class is decreared from parent class. method must have same name as its in the parent class.
- * Method have same parent class as in the parent class. method overriding is used to provide specific implementation.

program -

```
class super
{
    int x;
    super (int x)
    {
        this x=x;
    }
    void display ()
    {
        system.out.println("super x", +x);
    }
}
class extends super
{
    int y;
    sub (int x, int y)
    {
        super(x)
        this.y = y;
    }
    void display ()
    {
        system.out.println("super x = " + x)
        System.out.println("super y = " + y);
    }
}
```

class override test

```
{  
    public static void main (String arg[])
```

```
{  
    sub S1 = new sb1 (100, 200);
```

```
    display ();
```

```
}
```

```
}
```

* Overriding rules * They must be relation bet
-ween parents class & child
class

* It has same parameter.

b) WAP on add two integers & two float numbers.

```
public class Overloading
```

```
{
```

```
void addition (int a, int b)
```

```
{
```

```
int sum = a+b;
```

```
System.out.println ("sum of two integer number  
number is " + sum);
```

```
}
```

```
void addition (float a, float b)
```

```
{
```

```
float sum = a+b;
```

```
System.out.println (" Sum of two floating point  
number is " + sum);
```

```
{
```

```
public static void main (String arg [])
```

```
{
```

```
Overloading Test 1 d = new Overloading
```

```
d.addition (1, 10); Test 1 (1)
```

```
d.addition (1.5, 8.5);
```

```
}
```

```
}
```


by String class in Java.

String is a sequence of character. In Java it represents the sequence of character.

There are two ways in a string class

* By string literally

* By new keyword

By string literally - In this string is a double quote. Ex = "welcome"

By new keyword - here we use a new keyword.

Ex: String = new String()

* Methods of String class in Java

* char at ()

* concat ()

* length ()

* contains ()

* equals ()

* Byte upper class ()

* Byte lower class ()

* start with ()

* ends with ()

- i) Interface in Java is mechanism to achieve abstractions there can be only abstract method.
↳ in java interface not method body final fields. It is used to achieve to abstractions & multiple inheritance

Syntax -

```
interface Interface name
{
    variable declaration;
    method declaration;
}
```

Types -

- 1) Multiple Inheritance
- 2) Multilevel Inheritance
- 3) Single Inheritance
- 4) Hierarchical Inheritance.

Write
Question No.
properly

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Computer ScienceInvigilator's Signature / ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರ ಸಹಿ _____ Signature of Evaluator / ಪರೀಕ್ಷಕರ ಸಹಿ _____ Marks obtained / ಪಡೆದ ಅಂಕಗಳು : 27/30

Q. A

① Database Management System :- A collection of program that enable users to create and maintain a database.② Data Modeling :- It is logical structure and data relationship.③ Entity :- Entity may be object, class, place. It ER diagram is represent rectangle.
types 1. Strong entity 2. weak entity④ Attributes :- The pused to properties is defined the entity types. it represent ellipses.
(Age)⑤ Foreign key :- The foreign key is used to primary key of the entity in the entity set.
ex:- employee ID, Name, Department, salary,

Q. B

① Data user :- It is person interact with data daily, updating, reading and modifying the given data.

There are 8 types data user.

① Data Administrator (DAU) user.

The user group in person or the group incharge implementing the database application in the organization.

② Naive / parametric end user

Naive user use to unsophisticated who don't have any DBMS knowledge but they frequently their daily life in the desired result.

ex: ATM user

③ System Analyst:

It user who analyzes the requirement of parametric end user. They checked whether the required the end user is satisfied.

④ Sophisticated User

The user who engineer, scientist, business analyst, who have familiar. The data base is their own application. in the according to data base.

⑤ Application programmer

Application programmer is user to data language it written in high level language.

ex: Java, net, php.

⑥ Casual User occasionally use to data base, that accessing the database application.

⑦ Specified User application program do not fit in the pre-fractional framework.

③ data design ~~user~~ ^{their} is the user designed the data includes. view, index, constraints.

④ ER diagram is used to represent ER model in the database, which makes to converted into relationship.

⑤ ER diagram ~~provided~~ ^{is} to the purpose of real world modeling, which makes relation data.

⑥ ER diagram ~~is~~ ^{required} no terminology knowledge and no hardware support.

~~But~~ They are easily understand and create.

⑦ ER diagram gives knowledge and standard solution.

Q. C

② Entity :- Entity may be objects, class, place or person. It's ER diagram represent ~~rectangle~~.

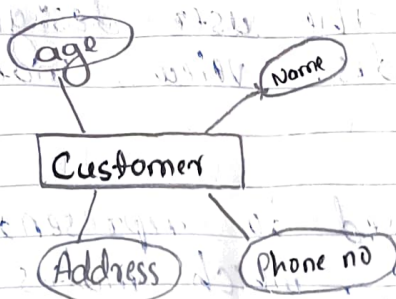
ex :- customers

There are two types.

① Strong entity :-

- strong entity is represented a ~~single~~ rectangle.
- strong entity does not depend on entity types.

ex:-



24 Weak entity

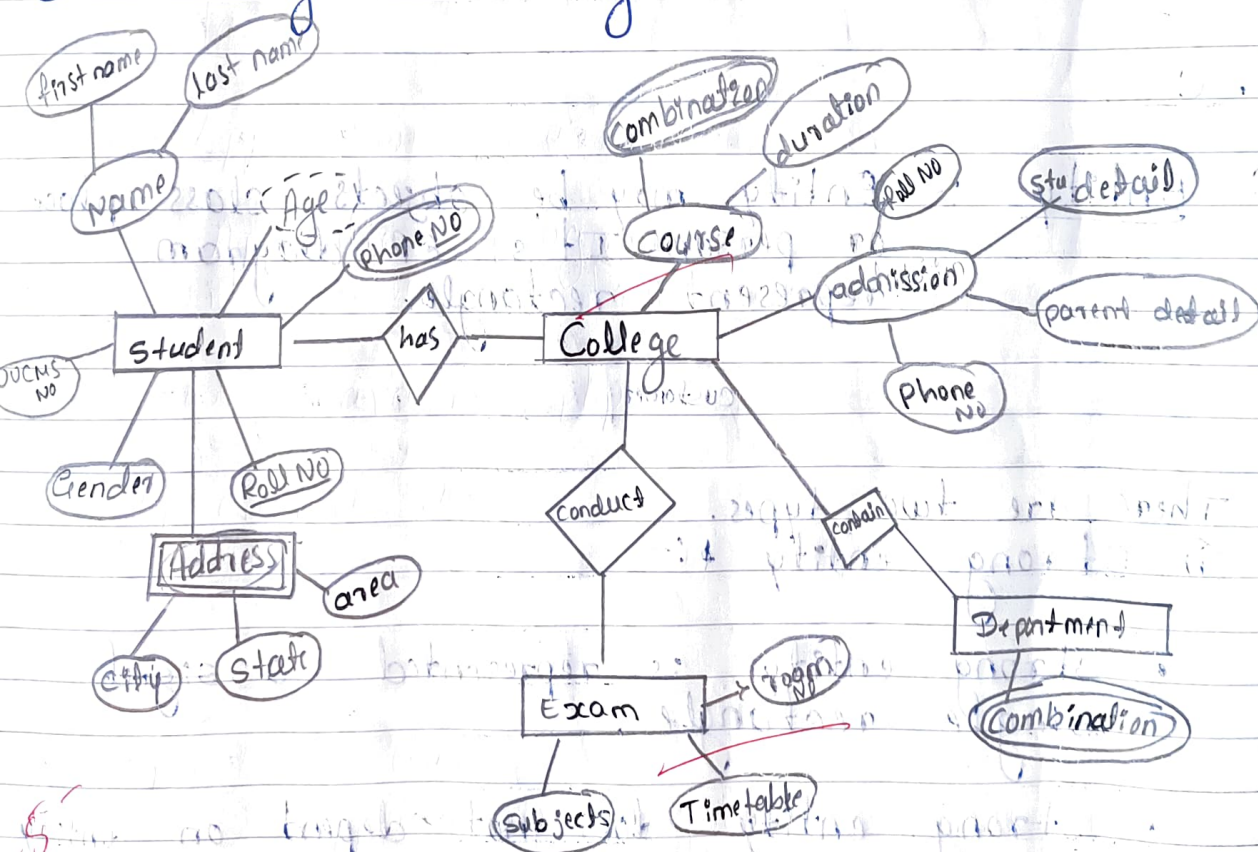
① weak entity is represented double rectangle

Weak entity depend on entity types

ex:-



① ER diagram of College.



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Q.I

1) Normalization is a process in which we organize the given data by minimizing the redundancy values present in a relation. In this, we eliminate the anomalies present, namely -
 Insertion, Deletion and Update Anomalies.

2) Join Operation is used to combine two tables having same attributes. It is divided into two types:-
 i) Inner Join
 ii) Outer Join → a) Left Outer Join
 b) Right Outer Join
 c) Full Outer Join.

3) Anomalies in ^{relational} database model refers to errors (or ^{irregularities / inconsistencies} irregularities) which arise in relational databases. It is divided into 3 types:
 i) Insertion Anomalies
 ii) Deletion Anomalies
 iii) Update Anomalies.

5) PL/SQL → Procedural Language and Structured Query Language.

4) In DBMS, Decomposition is a process of breakdown of a table into databases in a relation. A single table is divided into ^{smaller} many tables during the decomposition of tables.

6) Create table EMPLOYEE (empID int, emp-name varchar(10) UNIQUE, salary ~~float(8,2)~~ float(8,2) CHECK (salary > 5000));

6) Create table employee (emp-ID int UNIQUE, emp-name varchar(20), salary float(20,3) CHECK (Salary > 5000));

Q.II

1> Structure of Relational Module:-

i> Domain :- It is a set of values permitted for an attribute in a table. It is atomic. It is possible for various attributes to have same domain. For eg., Age.

ii> Tuple :- Each row in a table is called tuple.

iii> Attribute :- Each column in a table is called attribute. It defines a relation. For eg., Student name, roll no., etc.

iv> Relations :- They are in table format. A table has two properties - rows and columns. Rows represent records and columns represent attributes.

v> Relation Schema :- It is the design for the table.

vi> Degree :- It is the number of attributes of relation schema.

vii> Relation instance :- It is the numbers of tuples in a given table at a given time

Diagram illustrating the structure of a Relation Schema and its Instance:

The diagram shows a table with columns: Name, Roll No., Address, Age, and Mobile No. Above the table, the word "Attributes" is written with arrows pointing to each column. To the left of the table, the word "Relation name" is written with an arrow pointing to the table header "Student". Below the table, the word "Tuples" is written with arrows pointing to each row of data.

Name	Roll No.	Address	Age	Mobile No.
Retha	076	Nijayapur	19	786
Priya	077	Bugadkot	18	978
Raghu	078	Gulabnagar	19	456

3> View :-

View is a virtual table that is derived from one or more underlying tables. It is a saved query that users can refer as a table.

Advantages of view are:-

i> Data Abstraction.

ii> Simplified Query.

iii) Data Consistency

iv) Security

v) Logical Data Independence.

2) Relational Algebra is a widely used procedural language. It collects instances of relation as input and gives occurrences of relation as output. It uses various operations to perform this.

Basic Relational Algebra Operations are:

i) Unary Relational Algebra:

a) Select (symbol: σ) :- Used for selection of tuples at given selection conditions.

b) Project (symbol: π) :- Used for selection of attributes at given selection conditions.

c) Rename (symbol: ρ) :- It allows to rename the old relation to new.

ii) Relation Algebra Operations on Set Theory:

a) Union (symbol: $\cup$) :- ~~It is a set~~
 $A \cup B$ is a set of two sets A and B in which all the elements of A and B are present.

b) Intersection (symbol: $\cap$) :-

$A \cap B$ is a set of two sets A and B in which the elements of A are present which also belong B, but not other elements.

c) Set difference (symbol: $-$) :-

The result of set difference operation in tuples, which are present in 1 relation but not in second relation.

iii) Binary Relational Algebra:
Join, Division & Cartesian Product.

Q. III

1> Characteristics of Relations:-

i> Ordering of Tuples in a Relation:-

A relation is defined as a set of tuples. A relation is not sensitive to the ordering of tuples. Tuple ordering is not a part of relation definition because relation attempts to represent facts at a logical or abstract level.

ii> Ordering of Attributes in a Relation:-

The ordering of attributes is not important because attribute names appears with its value.

iii> Values in a Tuples:-

All the values in a tuple are considered atomic.

A special null value is used to represent the values that are unknown or inapplicable to certain tuples.

iv> Interpretation (Meaning) of a Relation:-

Each tuple in a relation is interpreted as a fact or a particular instance of an assertion.

2> Features of PL/SQL are:-

i> Block Structure:

PL/SQL is organized into blocks, which can be nested. Each block contains three sections, namely - declaration, executable and exception handling.

ii> Variables and Constants:

PL/SQL supports the declaration of variables and constants, which can be used to store data temporarily during the execution of code.

iii> Control Structure:

PL/SQL includes standard control structures like loops (FOR, WHILE), Conditional statements (IF, CASE) and exception handling (EXCEPTION).

in Procedures and Functions:

PL/SQL allows the creation of reusable sub programs in the form of procedures and functions.

Triggers:

PL/SQL can define triggers, which are blocks of code that automatically execute in response to certain views of a table.

Packages:

PL/SQL supports packages, which are collection of related procedures, functions, variables and other package constructs grouped together.

- 3) Normalization is a process in which we organize the given data by minimizing the redundancy values present in a relation. It eliminates the anomalies present, namely. insertion, deletion and update anomalies.

Types of Normalization:

- i) 1 NF (First Normal Form):-

In 1 NF, every database cell or relation has an atomic value which can't be further divided, i.e. should not contain multivalued attributes.

eg:-

Stud-ID	Name	Mobile No.
1	Jack	98 789
2	Sara	--- 567, --- 978
3	Max	--- 458

To convert the above table into 1 NF, we decompose the table.

Stud-ID	Name	Mobile No.
1	Jack	--- 789
2	Sara	--- 567
2	Sara	--- 978
3	Max	--- 458

its 2NF (Second Normal Form):

In 2NF, the given relation has to be 1NF and no partial dependency should exist.

~~Q~~
Ques



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Computer Networks.

Q 1. Framing :- It is layer to provide service to the network layer. the data link layer must use the service provide by the physical layer. * TO detect the errors

Q 6. Multiplexing is a technique used to combine and send the multiple data streams over a single medium.

Q 3. Switching technique is used to connect the system for making one-to-one communication.

Q 2. Checksum used by higher layers. It detects an error involving odd number of bits. as well as even number of bits.

Q 4. Aloha :- It is designed for an wireless LAN.
Ex: Radio.

* It can be used in any shared media in multiple station can provide data at a same time.

Q 5. Hamming distance :- the Hamming distance betⁿ two words (of the same size) the no. of distance betⁿ compares bits.

Q11.

3. transmission impairment.

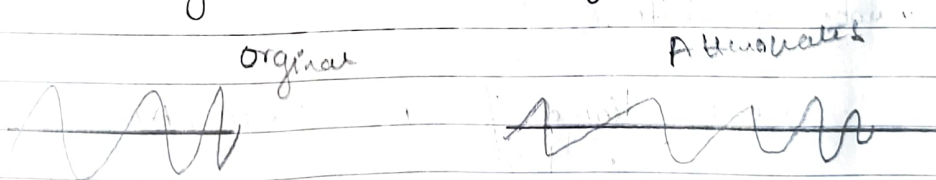
Signals travel through transmission media, which are not perfect. The imperfection causes signal impairment.

This means that the signal at the beginning of the medium is not the same as the signal at the end.

Attenuation :-

Attenuation means a loss of energy. When a signal, simple or composite, travels through a medium, it loses some of its energy in overcoming the resistance of the medium.

* That is why the wires carrying electric signals get warm in hot, dry weather.



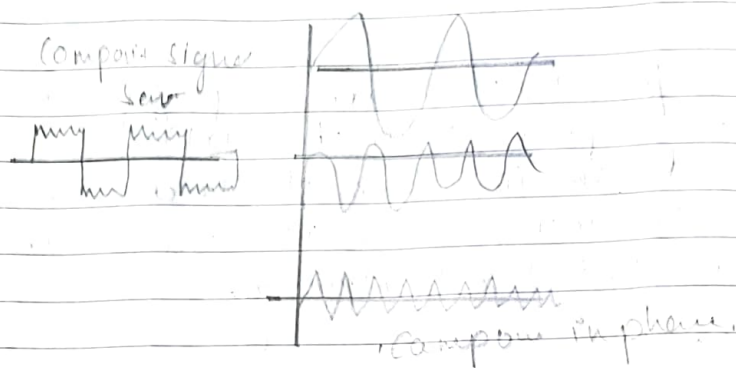
Decibel.

• To show that a signal has lost or gained strength.

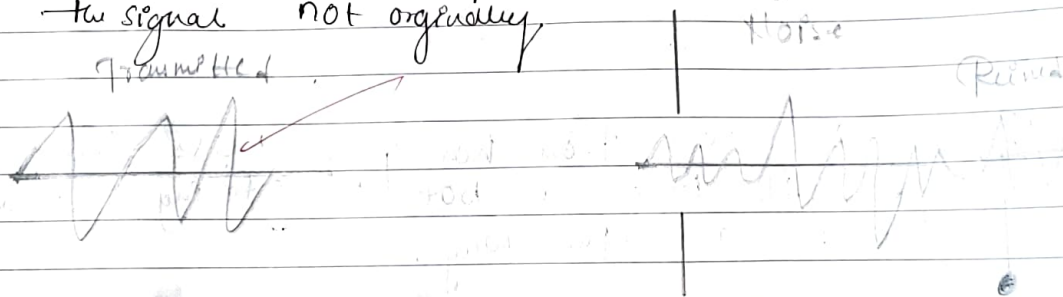
$$dB = 10 \log_{10} \frac{P_2}{P_1}$$

Distortion :- Means that the signal changes its form & shape.

* It can occur in composite signals made of different frequencies.



Noise :- Noise is another cause of impairment.
 Several types of noise, such as thermal noise, induced noise, crosstalk, and impulse noise, may corrupt the signal not originally transmitted.



To find the theoretical bit rate limit we need to know the ratio of signal power to the noise power.

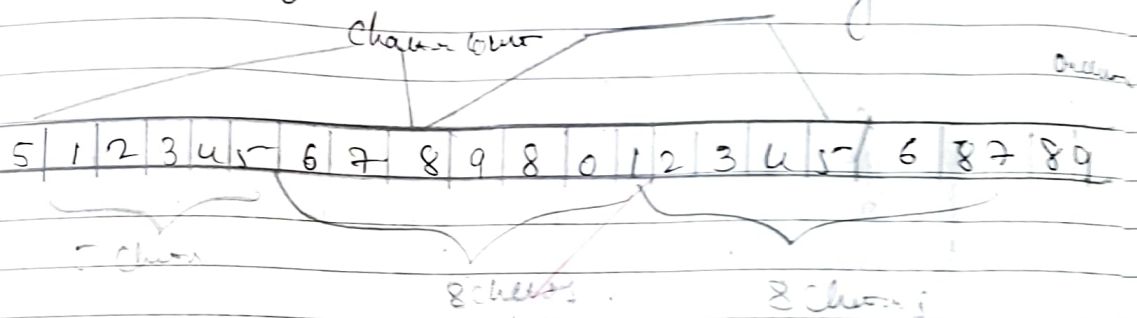
The signal to noise - to - noise power ratio.

$$SNR = \frac{\text{avg signal power}}{\text{Avg noise power.}}$$

Q 3)

Character Count

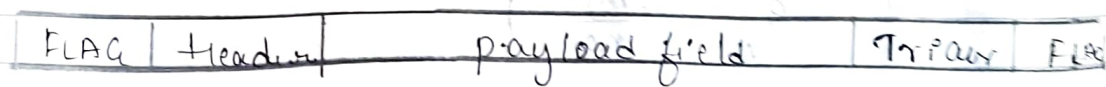
It uses a field in the header to specify the number of characters in the frame. When the data link layer sees the destination sees the character count it knows how many characters follow & thus it follows in 5, 5, 8 & 8 respectively.



Framing :- Each frame has special bytes called a flag byte. as both the starting & ending delimiter. In the way.

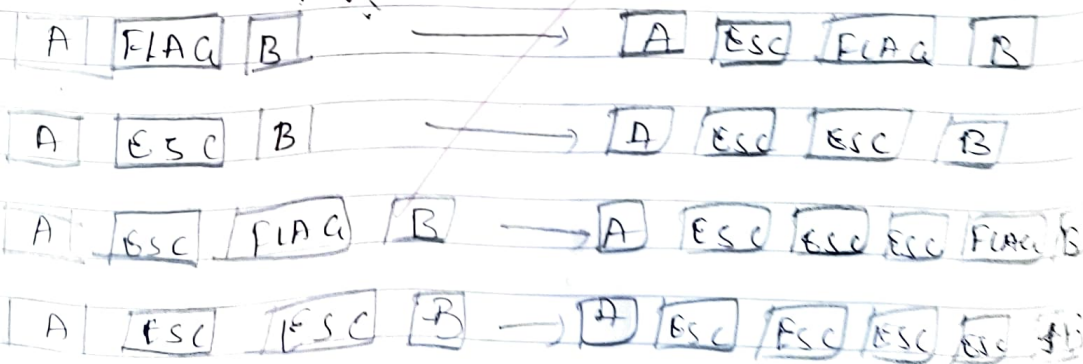
* If the Receiver ever loses synchronization, it can just search for the flag byte to find the end of current frame.

Two consecutive flag byte indicate the end of one frame & start of the next one.



original chaining.

Byte stuffing



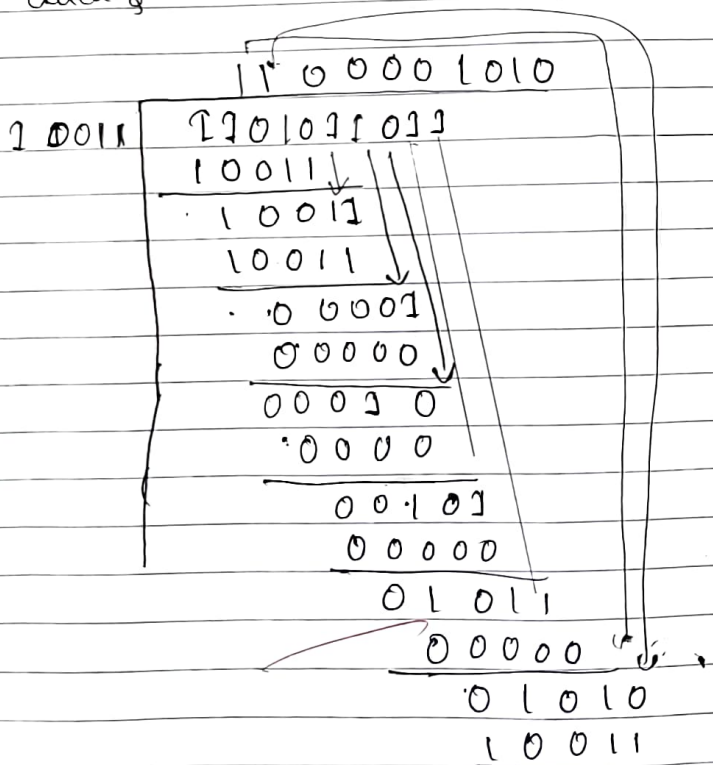
Solution:- Sender's side a data link layer inserts a special escape byte (Esc) just before each character... flag byte in the data.

Receiver's data link layer removes the escape byte before the data is given to the network layer.

11/ This technique is called byte stuffing or character stuffing.

Ques.

Q2) CRC :- Cyclic Redundancy Check. :- It can detect some of the errors.



It will get a division error by one.

10100
00000
10011

01110
00000
11100

Remainder

Transmitted Frame :- 11010110111110.

Performance :-

- CRC can detect all burst errors that affect an odd number of bits.

10011111010110110000
110000000000
100101
10011
000001



B. L. D. E. Association's

S. B. ARTS & K. C. P. SCIENCE COLLEGE, VIJAYAPUR

INTERNAL TEST 2023 -2024

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28/30

QNOI

1) Computer Network :-

Computer Network is a device in which multiple computers are connected to each other to share information and resource.

2)

5) Different Type of Network

- * Local area Network (LAN)
- * Personal Area Network (PAN)
- * Metropolitan Area Network (MAN)
- * Wide Area Network (WAN)

6) Topology :-

Topology is physical and logical arrangement of the nodes that are connected to the network is called topology.

II

① Computer Network Adv.

- * Sharing
- * Speed
- * Scalability
- * Integration
- * Cost effectiveness.

* Sharing :-

Computer network to share file, hardware, software and resource sharing capabilities of the network.

* Speed: It transfers the many application for speed will be increase the transmission of data will be increases.

* Scalability:

It is transmission of the data size will dynamically increases with time to for a complex responsibility of the network.

* Integration:

It is a transfer of complex resources are step by step transfer data

* Cost effectivity:

It is less expensive than compare to the other networks. it is costly networks are present in the topologies.

3) Explain LAN & WAN

LAN:

* LAN stands for local area network

* It covers small geographical area

* Typically range 10m - 100m

* It covers to the office, building etc

* Ex: wifi

* It is simple and easy to design

* It is uses in home by hardware and software.

Advantages.

* Range will be 10m - 100m

* It covers small geographical area

* Cost will be less

* It is a simple network.

* It is wide or wireless connection

* Wide connected is called WLAN

WAN:

- * WAN stands for wide area network
- * It covers large geographical area
- * Its range will be not exact
- * Country, state network
- * many cables are used in the network
- * It is wireless connection of LAN & MAN network

Advantage:

- * geographical network: It is used by world by the network.
- * It is large geographical area network
- * It is complex designed and arranged.

III

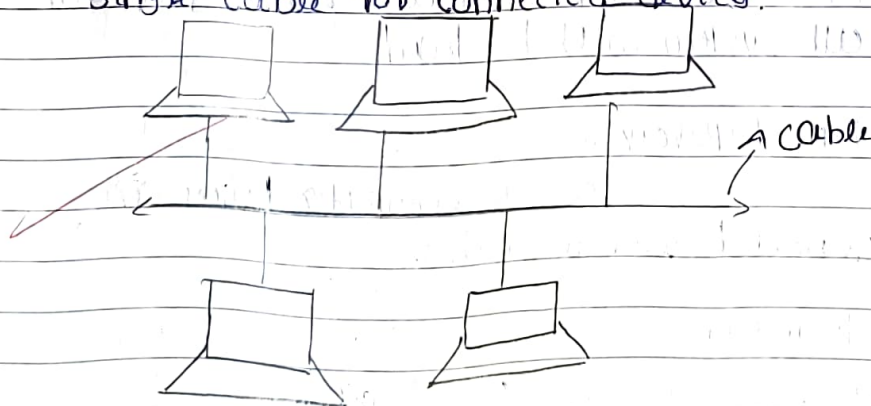
1) Different types of Topology

Topology: It is a physical and logical arrangement of the nodes to connect network.

5 Types of Topology

- * Bus topology
- * star topology
- * Ring Topology
- * Mesh topology
- * Hybrid Topology

① BUS topology: Transmission of a data for a single cable for connected devices.



Advantage

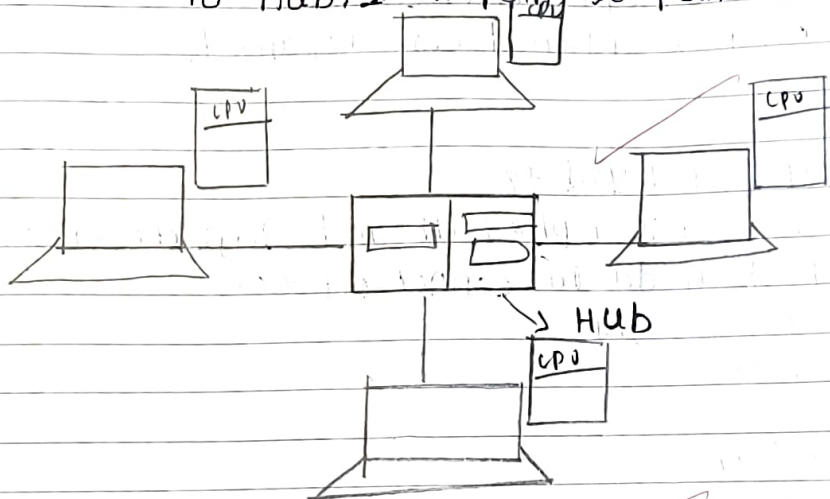
- ✱ It is easy to install
- ✱ ~~The cost~~ It is use less cable for compare with star topology

Disadvantage

- ✱ It is break the cable, stop the transmission of data.

② star topology:

All the device are connected to hub, it is point to point communication.



Advantage

- ✱ It is easy to initial and recognize
- ✱ Hub are used in the node,

Disadvantage

- ✱ It is ~~but~~ hub or router will be down for all system will be dead.

③ Ring topology:

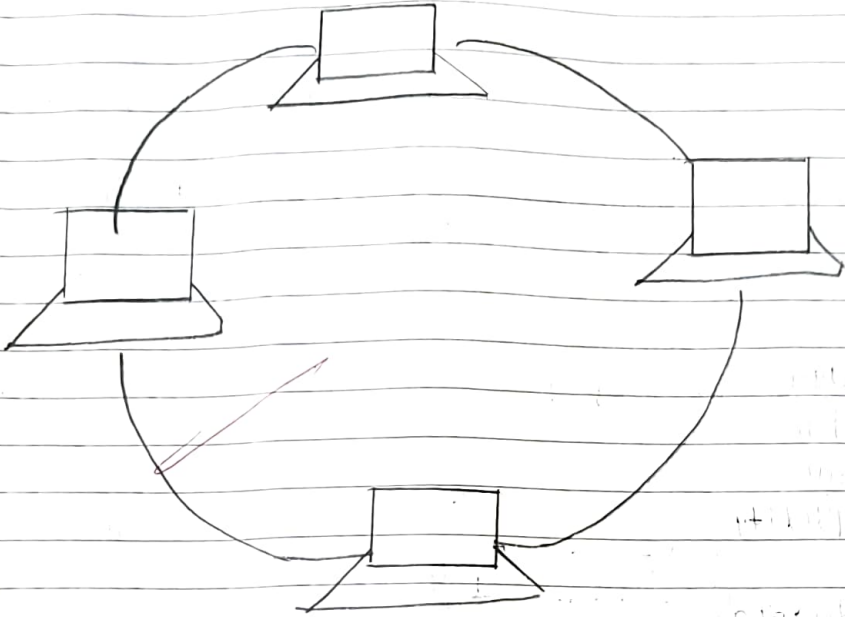
The the computer devices are connected to each other.

Advantage:

- ✱ It is a clock wise direction
- ✱ It transmission of data from one computer to other computer.

Disadvantage.

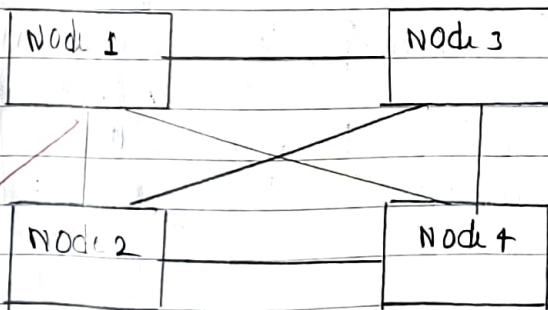
- If a link will be fail, only one link can affect for other links are active.



④ mesh topology:

It is interconnection between the nodes of the computers.

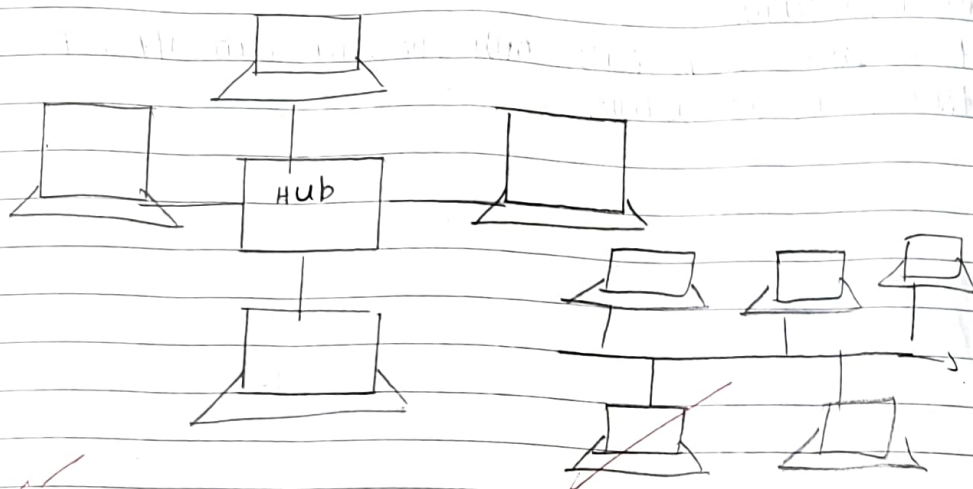
- Internet is an example for mesh topology
- mesh topology follows a formula $\frac{N \times (N-1)}{2}$



Advantage

- It is easy to install and recognize
- complex design for the topology.

- ⑤ Hybrid Topology: It is combination of various topologies are connected known as Hybrid topology.
- It is transmitted of data link to nodes.



Advantage

- ✦ Reliable
- ✦ Effective
- ✦ Complexity

Disadvantage

- ✦ complex design
- ✦ Costly hub
- ✦ costly infrastructure.

3)

TCP/IP model

Application Layer		FTP	SMTP	HTTP
Transmission Layer		UDP	TCP	SCP
Internet Layer	IP	ICMP Icmp		
Host to network Layer		ATM	ETHERNET	TOKEN RING

Host to network Layer:

- ✦ It is physical transmission of the host layer
 - ✦ It defines protocols connect host.
- EX: TOKEN RING, ETHERNET

Internet layer :-

- Delivery packets
- Routing
- Transfer of packets are not in order.
- Protocol dependant.

EX :- IP, ICMP, Icmp.

Transport layer :-

It is layer segmentation or splitting of the data

EX :- UDP, TCP

Application layer :-

→ It is ~~inter~~ interface between the host and service provide transport layer.

→ It includes high level protocols

EX :- HTTP, FTP, SMTP, TELNET

→ TCP/IP model is implementation of OSI model

→ protocols are dependant.

QNT

4) guided media :-

transforming a data ~~form~~ from

high ~~to~~ range level of bandwidth.

→ Virtual path between the receiver and sender.

→ EX :- UDP

User Datagram protocol.

9) protocol :-

Generally protocol is list of large

specify of software and hardware technologies.



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Roll No. / ಸ್ಥಳಾಂಕ: 314 Date / ದಿನಾಂಕ: 8-1-2024

Subject / ವಿಷಯ: Computer Science I Semester / ಸೆಮಿಸ್ಟರ್ : V Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ: _____

(Python)

Invigilator's Signature / ಕೀರತಿ ಮೇಲ್ವಿಚಾರಕರ ಸಹಿ Signature of Evaluator / ಪರೀಕ್ಷಕರ ಸಹಿ Marks obtained / ಪಡೆದ ಅಂಕಗಳು

29/30

Q1

10/10

① variable - It is container which store the data

ex = a = 10

② The feature of python

- * Interpreter
- * Interactive
- * easy & simple
- * Integrated
- * Scalable
- * Portable
- * Beginner friendly

③ Comment - Comment are not executable, when a program & program are readable & understandable It is denoted as #

ex = if a > b # Relation operator Compare two operators

④ Indentation - It is adding a white space after a statement and particular block of code

ex = if (a > b)
 Print("a is greater")
else
 Print("b is greater")

⑤ Input() - It take input from the user

Syntax

X = input ("")

Print() - It print the value

Syntax

Print = (Object, sep = <Separator string>, end = <end-string>)

③ the mode of python interpreter

① Interactive mode

② Script mode

① Interactive mode - It is command line shell which give immediate feedback to the each Statement

② Script mode - It is the mode python script file are stored in .py extension

Q2

③ Range() function

- It execute a list of line, the iterate given for loop

There are three parameters

① range (start)

② range (start, stop)

③ range (start, stop, step)

① range (start) - It start from zero & increment by 1 up to stop

ex - for i range (0, 5)
print (i)

② range (start, stop) - It start from 1 & end up to stop but not including stop value

ex - $i = 0$

```
for i range (0,5)
    print (i)
```

Output

0

1

2

3

4

③ ~~Range~~ Range (Start, stop, step) - It is special argument which increment & decrement by adding & subtracted by value

ex - for i range (0,5,2)

```
print (i)
```

Output

0

2

4

② Type casting - It convert one data type to another data type

① Int ()

Syntax

~~Print~~ $\rightarrow$ (int (input (" ")))

② float ()

Syntax

~~Print~~ $\rightarrow$ (float (input (" ")))

ex - a = 8.7

~~Print~~ $\rightarrow$ float (input ("enter the element"))

© String()

Syntax

Print (Std (Input (" ")))

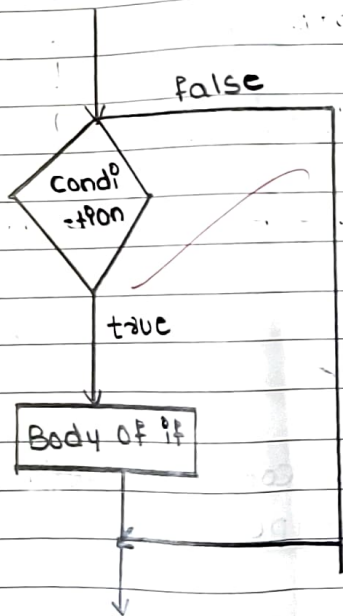
ex - a = "Sagar"

Print (Std (Input ("enter name")))

Q3

① Control Flow Statements

if - It is execute the if Statement is
execute if condition is satisfied



Syntax

if condition

Statement 1

Statement 2

⋮

Statement n

ex - a = 20 b = 10

if a > b

print ("a is greater")

print ("Next line")

- ② else Statement - (In the set of code if Statement) the Condition is true It execute if Statement otherwise it execute else Statement

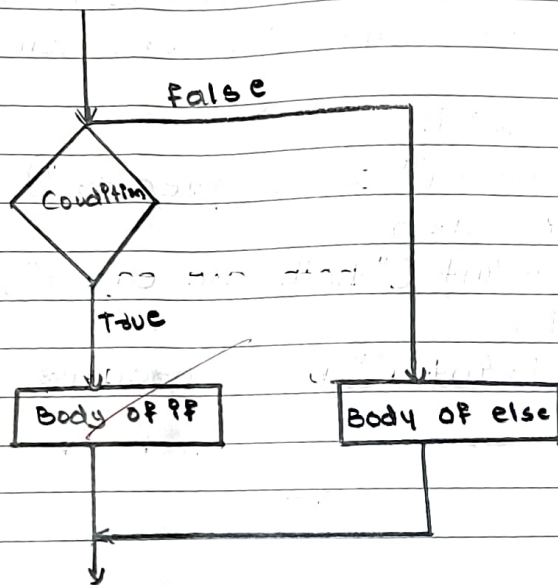
Syntax

if Condition

Statement

else

Statement



ex -

a = 10 b = 20

if a > b

Print ("a is greater")

else

Print ("b is greater")

- ③ elif - It is short form of else-if Statement

Syntax

if Condition

Statement

elif

Statement
elif Condition
Statement
;

else
Statement

ex = a = 10 b = 20

~~8x~~ a

a = int(input("enter a number"))

b = int(input("enter a number"))

if a > b

print("a is greater")

elif a = b

print("both are equal")

else

print("b is greater")



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IInd INTERNAL TEST 2023-2024

Name / ಹೆಸರು: AKshita Lalalika

Roll No. / ಸ್ಥಳಾಂಕ: 174 Date / ದಿನಾಂಕ: 10-2-2024

Subject / ವಿಷಯ: Computer Science

Semester / ಸಮಿಸ್ತರ: Vth Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ: WISKM2150099

Invigilator's Signature / ಕೋರಡಿ ಮೇಲ್ವಿಚಾರಕರ ಸಹಿ

Signature of Evaluator / ಮೌಲ್ಯಕರ್ತರ ಸಹಿ

Marks obtained / ಪಡೆದ ಅಂಕಗಳು

30/30

I Answer any five of the following.

10/10

1. Python String:- String are a character in the Elements of python. And it is immutable String. It cannot changes any specific string in the Elements of python String.

Eg:- Str - name

S := ("Python").

2. List in python :- List are collection of Element where we can change the Elements in the List and it is mutable means it can change List in python are in []

Eg:- `>>> [27, 4, 5, 8]`

`>>> list[2]`

`>>> 6`

3. Tuple:- Tuple are collection of data structure (Element) where it is a immutable the changes cannot be done by the tuple. Allows duplicate members.

Eg:- `>>> T = (23, 7.8, 64, 6, 'h', 'say')`

`>>> T`

`(23, 7.8, 64, 6, 'h', 'say')`.

4. Str () in String of python :- it is determine as the non-Element it is converted to the Element.

6) Unicode:- Unicode is the standard character encoding for the majority of the world's Computer. it ensure that text - including letters, Symbols, emoji different platforms and digital documents.

Eg:- `>>> unicode - string.`

5. Raw String :- A raw string is created by prefixing the character `r` to the string. In python, a raw string ignores all types of formatting within a string including escape character.

II Answer any two of the following.

③ Dictionary :- Dictionary are the key-value pair the key-key value in the elements of the dictionary.

Dictionary allows us to store and retrieve values based on their key.

Syntax :- `dict_name = {key1: value1, key2: value2}`

Eg :- `car = {'brand': 'Audi', 'model': '97'}`
`>>> car`
`{'brand': 'Audi', 'model': '97'}`

⇒ A dictionary cannot have two items with same key if we try to store duplicate items in a dictionary with same key.

⇒ Only one item in a dictionary is stored, the one which comes later.

Eg :-

`car = {'brand': 'Audi', 'model': '97', 'model': '98'}`

`>>> car = {'brand': 'Audi', 'model': '98'}`

⇒ Dictionary are mutable → changeable.
we can change the value in the specific key by referring that key.

Eg :- `car['model'] = '95'`

`>>> car {'brand': 'Audi', 'model': '95'}`

⑦ List Slicing in python:-

list_name [start:end] will give you Elements between indices start to end-1.

```
>>> number = [12, 56, 87, 45, 32, 97, 65, 72]
```

```
>>> number [2:-2]
```

```
[87, 45, 32, 97]
```

```
>>> number [4:20]
```

```
[32, 97, 65, 72]
```

```
>>> number [-1:-6]
```

```
[7]
```

```
[87, 54, 32, 97, 65]
```

```
>>> number [0:len(number)]
```

```
[12, 56, 87, 45, 32, 97, 65, 72].
```

list_name [start:end:step] will give you Elements between indices start to end-1 with skipping Elements as per value of step.

```
>>> number [1:6:2]
```

```
[56, 45, 97]
```

List modification using Slice operator:

```
>>> number = [12, 56, 87, 45, 32, 97, 65, 72]
```

```
>>> number [2:4] = ["hello", "python"]
```

```
>>> number
```

```
[12, 56, 'hello', 'python', 32, 97, 65, 72]
```

```
>>> number [2:4] = ["computer"]
```

```
>>> number
```

```
[12, 56, 'computer', 32, 97, 65, 72].
```

III. Answer any one of the following.

String-method	Syntax	Description
① capitalize()	String.name.capitalize()	The capitalize() method returns a copy of the String with its first character capitalized and the rest lower-cased.
② title()	String.name.title()	The method title() returns Boolean True if the String is a title cased String and there is at least one character, else it returns Boolean False.
③ isupper()	String.name.isupper()	The method isupper() returns Boolean true if all cased characters in the String are uppercase and there is at least one cased character, else it returns Boolean False.
④ lower()	String.name.lower()	The method lower() converts uppercase letters in String to lowercase.
⑤ replace()	String.name.replace()	The method replace() can be replace the String Element in it.

Eg:- ① >>> fact = "Abraham Lincoln was also an champion wrestler".

② >>> Species. Capitalized ()
"Charles Darwin discovered Galapagos tortoises".

③ >>> Species. Title ()
"Charles Darwin Discovered Galapagos tortoises".

~~④ >>> "Tortoises", lower ()
'tortoises'.~~

⑤ >>> "TSAR BOMBA", is supper () True.



Name / ಹೆಸರು: Sakshi Roll No. / ಸ್ಥಳಾಂಕ: _____ Date / ದಿನಾಂಕ: 15-07-2024
Subject / ವಿಷಯ: Web Technologies Semester / ಸೆಮಿಸ್ಟರ್: 6th Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ: WISKMA160420

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28/50

II

Answer

① The difference between HTTP & HTTPS

HTTP (Hypertext transfer protocol) and HTTPS (Hypertext transfer protocol secure) are protocols used to transfer data.

Security :- HTTP is not secure, while files are written in plain text, HTTP HTTPS is encrypted by SSL/TLS, It is a secure version of HTTP.

Port number :- HTTP typically uses port number 80 and HTTPS typically uses port 443.

Certificate :- HTTPS requires digital certificate from certificate authority to verify authenticity of the certificate. HTTP does not require certificate.

SEO Advantage :- Search engine like Google scores of HTTPS over HTTP to make search engine

② Basic structure of an HTML document

<!DOCTYPE> = It defines the document type and version of HTML.

<html> = This is the root element and encloses

→ the all the elements.

`<head>` = It contains meta information

`<title>` = It defines the title of the content and it specifies the web browser.

`<link>` = It defines the external link of the document

`<script>` It defines the external link of the script.

~~`<body>`~~ = It contains the content of the element document. It involves images, text, etc.

`<headers>` = It defines the navigational links.

`<nav>` = It defines the navigation links.

`<main>` = It contains the main content of the element document.

III

(i) CSS (Cascading style sheet) is a style style sheet that describes the presentation of the document written in HTML or other format.

CSS enhance the web development from separate the content from the design. This separation helps to maintain the web and enhance the web development.

CSS controls the HTML elements, font, class, size etc.

CSS style sheet, with

Single style sheet we can link the multiple pages of document we to single style sheet. using link

(2) Javascript is high-level interpreted programming language that enables interactive web development. Unlike HTML and CSS which are used for structuring and styling web pages. Javascript adds dynamic behaviours to websites. It allows developers to create interactive element such as form validation, content updates without reloading the page (AJAX) animations and other user-engaging features.

Javascript can manipulate the DOM (Document Object Model), enabling real-time updates of the content and structure of a web page.

I

- ① Internet is a globally connected network system that enhances the web ~~dev~~ that facilitates communication and data ~~serve~~ through vast networks.
- ⑤ Home page is the main or introductory page of a website. It ~~navigation~~ serves as the starting point or navigation and often provides an overview of the website and content purpose.
- ③ Web content refers to the information
- ② World ~~web~~ wide web is information ~~written~~ system that allows documents and other resources to be accessed over the internet using a web browser.
- ⑥ Packet switching is a method of a data transformation, where data divides in a packet before it sent. Packet switching divides into 3 types.
- ④ A web page document written HTML that is accessible via a world wide web can text, video, images, etc.



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INTERNAL TEST 20 -20

Name / ಹೆಸರು: Shreedhar Kumathalli Roll No./ಸ್ಥಳಾಂಕ: _____ Date /ದಿನಾಂಕ: 9-6-2024

Subject/ವಿಷಯ: R programming Semester/ಸೆಮಿಸ್ಟರ್: VI Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ: U15KM2150264

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25/30

Answers

Q1 R programming is a programming language which converts High level language into executable file to Microcontroller to perform some usefull mathematics task or realworld tasks.

Q2 readlines() function in R program it is used to take input from user
ex:

a = as:readlines(prompt="Text")

Q3 Data frame it is heterogeneous datatype to store rows and columns equally.

Q3

Ross Ihak and Robert Gentleman developed R programming in 1995

Q5

R - operators

Arithmetic operators

logical operators

Milolaneous operator

Assignment operator

relational operator

II Q1

Characteristics of R programming

- * It is opensource language having wide active user network
- * It is interpreted language
- * It is highly optimised for statistical data analyst and supports high graphical user interface.
- * Compare to other programming languages it have more usefull features
- * We can write multiple programming languages in R programming to develop anything.
- * It support crossplatform therefore it is platform independent.
- * For specific data analyst and graphical development it has stable performance.

Q3. creating user define function in R program

```
new_def_function <- function(a)
{
  if (i in a)
  {
    print(True)
  }
  else
  {
    print(False)
  }
}
```

creating user define function

- * addressing on variable using `<-` or `=`

then to have assign function() with parameter

III Types of loops in R programming.

- 1) for loop
- 2) while loop
- 3) Repeat loop.

1) syntax for 'for loop'

```
for(i in an)  
{  
    statement  
}
```

2) while loop syntax.

```
a = 10.
```

```
while (a <= 10)
```

```
{
```

```
    if (i in a) {
```

```
        print statement 1
```

```
    else {
```

```
        statement 2
```

```
    }
```

```
}
```

3) Repeat loop. Syntax.

```
x = 10
```

```
while (x < 20) {
```

```
    if (i in n) {
```

```
        statement 1
```

```
    }
```

```
    else {
```

```
        break
```

```
    }
```

```
}
```

Q3

Advantages of R-programming

- * It is opensource freely downloadable programming language
- * It is having wide range of user network it helps to ~~save~~ modify it for better use
- * It is High level language with more \$ stable for data analysts
- * It provides High level graphical user interface
- * It is optimised for machine learning etc.
- * It is have R studio we can run everything ~~in~~ with terminal or console.

Disadvantages of R-programming

- * Compare to other programming languages it feels like complex to understanding it's features ~~and~~ functions
- * It have limited Ram in R studio High performance tasks can be fricky to execute
- * New users can ~~not~~ not understand ~~be~~ R-programming easily becouse of it's complexibility. Complex structure.
- * ~~if~~ Compare to othe programoning languages it is ~~no~~ feels slower to run tasks.

Name / ಹೆಸರು: Siddhu Dumanavar Roll No./ಸ್ಥಳಾಂಕ: _____ Date /ದಿನಾಂಕ: 7-8-2024Subject/ವಿಷಯ: Web Technologies Semester/ಸಮಿಸ್ತರ: VI Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ: V15KMS235Invigilator's Signature / ಪರೀಕ್ಷೆ ಮೇಲ್ವಿಚಾರಕರ ಸಹಿ: _____ Signature of Evaluator / ಪರೀಕ್ಷಕರ ಸಹಿ: _____ Marks obtained / ಪಡೆದ ಅಂಕಗಳು: 27/30

Q1

1] JavaScript object

JavaScript objects are the collection of properties. These properties are association between name (key) & value. Objects can contain multiple type of values.

Q2] Variable declaration

We can declare a variable using var, let, const etc.

```
let name = "Siddhu";
```

Q3] The primitive data

- * undefined
- * ~~Boolean~~
- * BigInt
- * null
- * number
- * symbol
- * String

Q4] we can use alert to display the alert box

```
alert("It's an alert box");
```

Q5] we can use arr keyword to create an array

```
let arr = [1, 2, 3, 4, 5, 6, 7];
```


II
Q2] JavaScript is versatile, high-level programming language primarily used in web development to create interactive & dynamic web pages.
It JavaScript is essential for modern web applications, making them more responsive & user-friendly by allowing developers to implement functionalities like form validation, dynamic content

Its role is it enable client-side scripting, allowing developers to enhance user interfaces, validate input, animate elements, & perform synchronous operation like data fetching without reloading the web page.

Q3] The signification of JavaScript dynamic typed

JavaScript's dynamic typing means that variables are not bound to a specific data type & can hold any type of values. This flexibility allows for easier & speed development as type declarations are not needed. It can also lead to runtime errors if variable types are not managed correctly.

ex

```
let variable = 48;  
variable = "Computer";
```

```
console.log(variable);
```

Output: ~~48~~ Computer

Q.111

Q.1] * Screen output in javascript can be handled using various methods like alert, console.log & manipulating the DOM

* keyword input be managed using the prompt function for simple input or event listener for more complex input

Ex

Example for screen output

```
console.log("Hello, world");
```

```
alert("Hello, world");
```

```
document.getElementById("output").innerText = "Hello, world";
```

Example for input screen

```
let userin = prompt("Enter your age:");
```

```
console.log("user age is:", userin);
```

```
document.addEventListener('keydown', function(event) {  
    console.log('key pressed:', event.key);  
});
```

Constructor functions are special function used to create & initialize objects. They are defined using the function keyword and invoked with the new keyword. The this keyword inside the constructor, refers to the newly created object.

Example

```
function bike(make, model, year) {
```

```
  this.make = make
```

```
  this.model = model
```

```
  this.year = year
```

```
  bike.prototype.displayInfo = function() {
```

```
    console.log(`${this.make} {this.model} {this.year}`);
```

```
  }
```

```
}
```

```
let bike1 = new Bike("Honda", "shini", "2008");
```

```
let bike2 = new Bike("Bajaj", "platinum", "2010");
```

```
$
```

```
bike1.displayInfo();
```

```
bike2.displayInfo();
```




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1st

INTERNAL TEST 20 23 -20 24

Name / ಹೆಸರು: Ragini Dwivedi Roll No. / ಸ್ಥಳಾಂಕ: 231 Date / ದಿನಾಂಕ: 09-06-2024

Subject / ವಿಷಯ: R-Programming Semester / ಸೆಮಿಸ್ಟರ್: V7 Exam Seat No / ಪರೀಕ್ಷೆ ಸ್ಥಳಾಂಕ: UJ5KM2150506

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27 / 30

①

R programming is high level language which is used in statistical purpose where basically used for data analysis and data representation

②

readlines() :-

readline() is used to read some or all text lines from a connection object.

Syntax:-

readlines (con, n = -1L)

③

dataframe :-

Dataframes are tables of data with different types of columns & rows.

④

The R-programming language was created by statisticians Ross Ihaka & Robert Gentleman in 1993.

⑤

Types of Operators

① Arithmetic

② Relation

③ logical

④ Assignment

⑤ Miscellaneous

⑥

Factors in R programming is a data structure used to categorize and store data.

It represents a categorical variable and it deals with fixed number of unique value.

[5 marks]

①. Main characteristics of R programming

①. Open source:-

R is an open source software environment. It is free of cost and can be adjusted and adopted according to users and project requirement.
R is freely available.

②. Strong Graphical Capabilities :-

R can produce static graphics with production quality and has extended language providing interactive graphic capabilities.
It makes data visualization easily.

③.

Comprehensive Environment:-

R has a very comprehensive development environment meaning it helps in statistical data analysis.

④ Running Code without compiler :-

R is an interpreted language which means that does not need to compiler to make a program from the code.

⑤. Distributed Computing:-

In distributed computing tasks are split between multiple processing nodes to produce processing time and increase efficiency.

(2) List of datatypes in R.

- | | | |
|-------------|-----------|----------------|
| (1) Integer | } numeric | (6) Raw |
| (2) float | | (7) factors |
| (3) logical | | (8) characters |
| (4) String | | |
| (5) vector | | |

(1) Integer :-

It defines number with suffix L.

Ex:- `a = 2L;`

(2) float :-

It is also numerical type data type which is represented in decimal values.

Ex:-

`a = 2.3;`

(3) logical :-

In other programming it is known as boolean. In R language it is logical where two parameters i.e. true & false

Ex:-

`a = true;`

(4) string :-

string is collection of characters, which is enclosed in " ", ' ', ` `

Ex:-

`a = "abc";`

(5) vector :-

vector is datatype which stores same type of values.

Ex:- `a = c(1, 2, 3);`

row:-

A row datatype specifies values at row bytes.

Ex:- $a = '10';$

[5 marks]

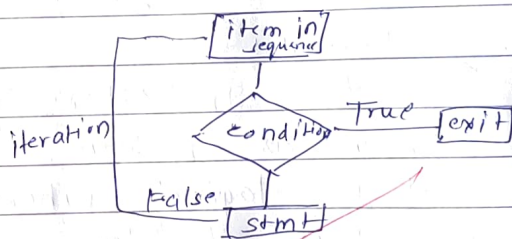
①. Types of loops in R.

① For loop:-

for loop is entry control loop which is executed until the condition is true.

Syntax:-

for (value in sequence)
{
 stmt
}



②. repeat loop:-

It is a simple loop that will run the same statement repeatedly until the condition is encountered.

Syntax:-

repeat
{

 Statement

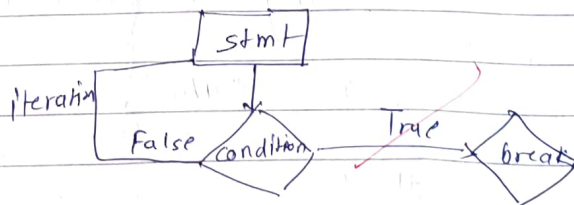
 if (condition)

 {

 break

 }

}



③ while loop:-

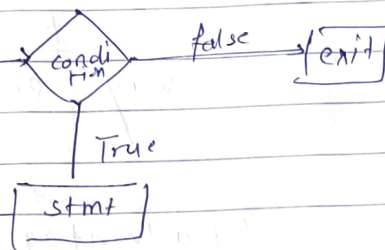
It is type of entry control loop that will run a stmt repeatedly unless the given condition is false

Syntax:-

while (condition)

{
 stmt
}

iteration



③ Advantage & disadvantage of R

Advantages of R

① statistical use:-

We can use in statistics this for data analysis. It is ideal for data analysis & data visualization.

② Open source & Free:-

R is open source & free programming language. This makes it more accessible.

③ Platform independent:-

R is cross-platform which insures that applications developed in R can be used different operating system.

④. Interppcrability:-

R can be easily integrated with other programming language & tools such as C++, python etc.

⑤. Graphical Capabilities:-

R is known as its excellent & very amazing graphical representation.

Disadvantage:-

①. ~~Per~~ Performance level Issue:-

R can be slower than other programming language

②. Memory management:-

R's memory is inefficient for big data storage.

③. Dependency management:-

Managing package dependencies & ensuring compatibility between packages is less.

④. learning Curve:-

R has a steep learning curve for beginners, without a background in statistics.

⑤. less suitable for web application:-

R is not as well-suited for web development like python & html.