MANIPAL ACADEMY of HIGHER EDUCATION
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Question Paper - Report

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KENNETH FRANCIS RODRIGUES .
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Question Paper

Back

MANIPAL ACADEMY OF HIGHER EDUCATION

B.Tech 1st Semester Sessional Examination September 2024

PROGRAMMING FOR PROBLEM SOLVING [CSE 1171]

Marks: 30 **Duration: 90 mins.**

MCQ

Answer all the questions. Section Duration: 20 mins

Answer all questions

1) Outline the role of the return 0; statement in the main function (0.5)

It defines a function | It returns a value indicating successful program execution | It terminates the program abruptly | It starts a loop

2) Which of the following types of memory is volatile? (0.5)

ROM | Cache memory | Hard disk | optical storage

3) What will be the output of the following error free C code? (0.5)

```
#include < stdio.h>
int main()
{
int i, j;
for (i = 2; i < 10; i++) {
for (j = 2; j < = (i/j); j++)
if (!(i % j))
break;
if (j > (i/j))
printf("%d ", i);
```

}return 0; }(

2 3 4 5 6 7 8 9 3 5 7 9 2 3 5 7 2 3 5 7 11

4) What is the output of this C code? (0.5)

```
#include < stdio.h>
int main()
{
int i = 0, j = 0;
while (i< 5&&j< 10)
{
i++;
j++;
}
printf("%d,%d\n",i,j);
return 0; }
```

5, 5 10,10 5,10 error

5) The expression (5>1 || 6< 1) evaluates to: (0.5)

1 0 2 -1

6) In the following switch statement, what will be the output if the user enters 5 as the value of x? (0.5)

```
switch(x % 3) {
case 0:
printf("Zero");
break;
case 1:
printf("One");
case 2:
printf("Two");
break;
default:
```

printf("Default");

}

Two One Zero OneTwo

7) What will be the value of sum after the execution of the following do-while loop? (0.5)

int i = 5, sum = 0;

do {

sum += i;

i--;

} while(i > 1);

10 14 15 20

8) How many times will the following for loop iterate? (0.5)

for(int i = 1; i < 20; i *= 2) {

printf("%d ", i);

}

4 times 5 times 6 times 20 times

9) Identify the output of the following code? (0.5)

int arr[] = {2, 4, 6, 8, 10};

int i;

for (i = 0; i < 5; i++) {

if (arr[i] % 4 == 0) {

printf("%d", arr[i]);

break;

}

}

2 8 6 4

10) Identify the output of the following program (0.5)

#include< stdio.h>

int main()

```
{
int arr[4][5], i,j;
for(i=0;i< 4;i++)
{
for(j=0;j< 5;j++)
{
arr[i][j]=10*i+j;
}
}
printf("%d",arr[1][1]+9);
return 0;
}
```

10 15 20 29

DESCRIPTIVE

Answer all the questions.

Answer all questions

11) Create a C program that generates a prime factorization pattern based on user input. (4)
The program should:

1. Ask the user to input a positive integer n (4 < = n < = 50).

2. For each non-prime numbers from 2 to n, display it’s all factors.

3. For each prime numbers between the limits, display "PRIME”.

Example: Enter a number (4 < = n < = 50): 10

2: PRIME

3: PRIME

4: Factors: 1 2 4

5: PRIME

6: Factors: 1 2 3 6

7: PRIME

8: Factors: 1 2 4 8

9: Factors: 1 3 9

10: Factors: 1 2 5 10 .

12) Design a flowchart that simulates a basic banking system. The flowchart should display a menu of options: **Deposit**, **Withdraw**, **Check Balance**, and **Exit**. Use a switch statement to handle user input and update the account balance accordingly . (3)

13) Assuming a=8 ,b=15 and c=4, evaluate the following expression:

2*((a%5)*(4+(b-3)/(c+2))). (3)

14) Differentiate between implicit and explicit type casting with suitable examples. (3)

15) Develop an algorithm to find the greatest common divisor (GCD) of two positive integers. (3)

16) Illustrate the working of binary search for the given 1D array [3, 6, 9, 12, 15, 18, 23, 30, 35, 40] to search the number 23. (Note: Do not write algorithm, flowchart or program.) . (3)

17) Compare and contrast ‘break’ and ‘continue’ statements in C programming. Provide a simple example for each to illustrate their usage . (2)

18) Write a C program to read MxM 2D array and reverse the elements of each row of the matirx. Display the original and modified array in matrix format in main.

Example:

Input:

Original matrix elements

1 2 3

4 5 6

7 8 9 (2)

Output:

Modified matrix elements

3 2 1

6 5 4

9 8 7.

19) Write a c program to sort a given input array using bubble sort . (2)

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^ Top