Bahria University, Islamabad Campus
Department of Computer Science
Mid Term Examination
Class & Section: BS(CS)-1-A,B,C
(Fall 2022 Semester)
Paper Type: Descriptive

Course:	Computer Programming	Date: Nov 2022
Course Code:	CSC-113	Max Marks: 40
Faculty's Name:	Dr. Arif ur Rahman, Mr. Burhan Abbasi, Ms. Rabail Zahid	Total Pages:
Time Allowed:	90 minutes	Time:

INSTRUCTIONS:

1. Attempt all four questions.
2. Do not write anything on the question paper except your name and enrolment number.
3. All questions are proof read and correct. In addition, comprehension of questions is part of examination. Therefore, don't ask any question from ANYONE.
4. After asked to commence the exam, please verify that you have eight (8) different printed pages including this title page. Get some bonus marks by writing your name in Capital Letters at the end of the paper. There are a total of four questions.
5. Use permanent ink pens only. Any part done using soft pencil will not be marked and cannot be claimed for rechecking.
6. Make sure you provide answers in the space provided. I follow this rule quite strictly!

Student's Name: _____ Enroll No: _____
(USE CAPITAL LETTERS)

Section: _____

Student Sign: ---------- Invigilator's Sign: ----------

Total Questions	Q-1	Q-2	Q-3	Q-4	Total
Marks Obtained					
Total Marks	20	6	7	7	40

Question # 1 (15 Marks)

a. Please note there are no syntax errors in the given set of codes. All the code snippet contains #include<iostream> and using namespace std;. Write the output produced by executing the following C++ codes? **(6*2 marks)**

`int main()`
`{`
`  for(int  num = 1; num<= 5; num++)`
`  {`
`  const int num2=3;`
`  cout<<num<<" "<<num*(num2+1)/2<<endl;`
`  }`
`  return 0;`
`}`	

`int main()`
`{`
`// first input num1=6,and then second num1=9`
`  int num1, i=1;`
`  cin >> num1;`
`  while (i<=num1)`
`  {`
`  if (i % 2 == 0)`
`  cout<< "-"<< num1 << "/" << ((i * 2) - 1)<<" ";`
`  else`
`  cout << "+" << num1 << "/" << ((i * 2) - 1)<<" ";`
`  i = i + 1;`
`  }`
`}`	

`int main()`
`{`
`  int i=1, j=2, k=3 ;`
`  char m=j;`
`  cout<<(k+m<j || 3-j>=k)<<endl;`
`}`	

`int main()`
`{`
`  int delta = 0,x =3;`
`  if(x%2 == 1)`
`  {`
`  delta = delta + x;`
`  x++;`
`  }`
`  if(x%2 == 0)`
`  {`
`  delta = delta + x;`
`  x++;`
`  }`
`  if(x%2 == 0)`
`  {`
`  delta = delta + x;`
`  }`
`  cout << delta;`
`  return 0;`
`}`	

b. On your job, you have come across following code, can you identify what is the purpose of this code: **(2 Mark)**

`#include <iostream>`
`using namespace std;`
`int main()`
`{`
`// Write C++ code here`
`for(int i=10;i>0;i--)`
`{`
`cout<<i *i <<endl;`
`}`
`return 0;`
`}`	

c. You have been hired by a software development firm to complete the documentation of the programs written in past. To understand what this program does, first you need to determine the output of the code given below. **(2*2marks)**

`#include <iostream>`
`using namespace std;`
`int main()`
`{`
`int x =10;`
`int y=x++;`
`do`
`{`
`cout<< y << " ";`
`++x;`
`cout<<x <<endl;`
`y= ++x;`
`}`
`while(y < 15 && y <15);`
`return 0;`
`}`	

`#include <iostream>`
`using namespace std;`
`int main()`
`{`
`int a = 0, b=36; float f=3.9;`
`b+=(a = 50)*f/3+5.1-6.8*10-b%5;`
`cout << a << "$" << b;`
`return 0;`
`}`	

d. Dry run the following pseudo code and write the output corresponding to different inputs in the box provided. (4 marks)

```
start
input n
result = 1
if ( n mod 2  = = 0 )
begin
    count = 0
    while count < n
    begin while
        result = result * 2
        count = count + 1
    end while
    result = result - 3 * n
end
else
begin
    result = 0
    count = 1
    while count <= n
    begin while
        result = result + count * count
        count = count + 1
    end while
end

cout "count is : "  count
cout "result is : "  result
end of code
```

Input	Output of the pseudo code
3	
6	

Question # 2 (6 Marks)

You have been tasked to create a program that takes input from the user and identifies if the number is a multiple of 3, 5, or 7. For example if user enters 9, output will show "Number is multiple of 3." If user enters 4, output will show "Number is not a multiple of 3 ,5 or 7". If user enter 21, output will show "Number is multiple of 3 or 7". Remember the code must work for all integers. User must enter only one number at a time, and he may check as many numbers as he likes without the need to run the program again and again. (This can be done using loops)

Question # 3 (7 Marks)

Just Roll with it

Remember the good old dice? It has 6 faces with numbers 1-6 on it. Implement a game that asks a user to input two scores that represent the numbers on two different dice. If any of the number is incorrect, then the game should output "invalid dice number" and ask for the score again.

So after you have your valid inputs, **here are the rules:**

1. If the sum of the scores on the two dice is even or 3, the program outputs "you are a winner" and the game ends.
2. If the sum of scores of the two dice is 11 then the program should output "you have lost the game" and the game ends.
3. If the sum of scores of the two dice is 5, 7 or 9 then the program should output "carry on" and asks for the scores again (the game begins again).

Question # 4 (7 Marks)

You are given an integer **array arr** and its size **MAX_SIZE.** ***Write a program that takes in a range from the user and prints the total number of elements that fall within the range.***
HINT : For Range user will enter two numbers.
Suppose the **array arr contains**: 200, 10, 334, 12, 145, 101, 88, 21, 44, 76.
In this case **MAX_SIZE = 10.**

Sample example 1:
Input: 50 and 100
Output: 2 //88 and 76 fall within the range [50 - 100]

Sample example 2:
Input: 103 and 10
Output: 7 //10, 12, 101, 88, 21, 44, and 76 fall within the range [103 - 10]

Best of Luck