Solution paper

Object Oriented Programming

BSIT - Fall 2024
Semester 3

Quiz - 1

Time Allowed: 40 Mins **Total Marks: 30**

1. Multiple Choice Questions: **(8 marks)**

1. Which of the following is the correct syntax for a for loop in C++?
   a. for(initialization; condition; increment)
   b. for(condition; initialization; increment)
   c. for(initialization, condition, increment)
   d. None of these

2. Which of the following is NOT a relational or logical operator?
   a. =
   b. ||
   c. ==
   d. !=

3. Which statement is correct about if-else in C++?
   a. else can exist without if
   b. else must follow if
   c. if can exist without else
   d. Both B and C

4. What is the output of this code?

```
int i = 3;
do {
        cout << i << " ";
        i--;
} while(i > 0);
```

   a. 3 2 1 0
   b. 3 2 1
   c. 2 1 0
   d. Infinite loop

Dry run

i	condition	Output
3	~~true~~	3
2	true	3 2
1	true	3 2 1
0	false	

5. What is the scope of a variable declared inside the for loop header?
   a. Global scope
   b. Function scope
   c. Loop body only
   d. Cannot declare in for loop header

6. Consider this conditional code. What will be the output?

```
int x = 10;
if(x > 15)
        cout << "Greater";
else if(x > 5)
        cout << "Medium";
else
        cout << "Small";
```

x = 10 | output
x>15 - false
x>5 - true | Medium

   a. Greater
   b. Medium
   c. Small
   d. Compilation Error

7. What happens if the break statement is omitted in a switch-case structure?
   a. Only the matching case executes
   b. Fall-through occurs executing subsequent cases
   c. Compilation error
   d. Program crashes

8. Which of the following expressions will always evaluate to true to create an infinite loop?
   a. for(; true ;)
   b. while(1)
   c. do {} while(true)
   d. All of the above

---

2. Write the output of the following code snippets: **(8 marks)**

Code snippet	Output

int main ()
{
int a = 0, b = 2, x = 4, y = 0;
 	
cout << (a == b) << endl;
cout << (a != y) << endl;
	0 false
	0 false
	1 true
	0 false

acceptable this time only

```
        cout << (x >= b) << endl;
        cout << (a < y) << endl;
        return 0;
}
```

```
int main ()
{
        for(int i=0; i<3; i++) {
            for(int j=0; j<3; j++) {
                    if(i+j > 3) break;
                    cout << i+j << " ";
            }
        }
        return 0;
}
```

0 1 2 1 2 3 2 3

Output

i	j	output
0	0	0
	1	1
	2	2
1	0	1
	1	2
	2	break-3
2	0	2
	1	3
	2	break

3. For an input n = 6, the program should produce the following output: **(7 marks)**

1 * 3 * 5 _ ← spaces can be considered, can be ignored

* 2 * 4 * 6

1 * 3 * 5

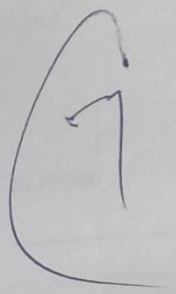
* 2 * 4 * 6

Write the code that generates this pattern for any even number n.

```
#include<iostream>
using namespace std;

int main()
{   int n;
    cout<< "Enter number: ";
    cin>>n;

// first loop for 4 rows

for(int r=1; r<=4; r++)
{   if(r%2==1) //odd rows
    {   for(int i=1; i<=n; i+=2)
        {   cout<<i;
            if(i+2<=n) //checking for next * before hand
            {  cout<<"*"; }
        }
    }
else  //repeat for even rows
{   for(int i=2; i<=n; i+=2)
    {   cout<<"*"<<i;
        //easier this way
    }
}
    cout<<endl;
}

return 0;

} //closing the main.
```

4. ATM Withdrawal Simulation: **(7 marks)**

An ATM only dispenses notes of 500, 100, and 50. Write a program that takes an amount (multiple of 50) and prints the exact number of each note to be given. If the amount cannot be dispensed (e.g., not divisible by 50), print an error.



```
#include <iostream>
using namespace std;

int main()
{
    int amount;
    cout << "Enter the amount: \n";
    cin >> amount;
    // First check for dispensible amount
    if (a % 50 != 0)  // not a multiple = indespensible
    {   cout << "Error! Indespensible amount" << endl;  }
    else  // despenible amount case
    {
        int x = a ;
        cout << "Amount " << a << " has: \n";
        cout << x / 500 << " notes of 500 \n";
        x = x % 500  // updating value left behind after countings notes
        cout << x / 100 << " notes of 100 \n";
        x = x % 100 ;
        cout << x / 50 << " notes of 50 \n";
    }
    return 0;
}
```