National University of Computer and Emerging Sciences, Lahore Campus

Course:	**Programming Fundamentals**	**Course Code:**	**CS-1002**
Program:	**BS (CS)**	**Semester:**	**Fall 2024**
Date:	**11 September 2024**	**Total Marks:**	**15**
Section:	**BCS- 1B**	**Name:**	
Exam:	**Quiz-1**	**Roll Number:**	
Time:	**20 Minutes**		

Instruction/Notes: Do not write anything on the back side of this sheet. (Penalty: -5)
Any form of plagiarism will result into negative penalty.

Q#1: Determine the output of the program. (Assume that there is no syntax error)

```
int main(){
   int x = 8, y = 10, z = 2, r = 3;
   if(++x % y / z++ % 2 == 0){
      cout << "inside if\n";
      r = r + x++ * --y / z;
      y = x + r  / y;
   }
   else{
      cout << "inside else\n";
      x = r + x++ * --y / z;
      z = x + r  / y;
   }
   cout << x << ", " << y << ", " << " " << z << ", " << r ;
   return 0;
}
```

Working (show the working of each instruction that will execute**)**

Output:

Attempt the programming question on Answer sheet

Q#2: Assume that you are working on a system that only accepts binary digits (i.e., either 0 or 1). The system will process internally to convert the binary into its equivalent denary. For example, the binary representation of denary number 4 is 100. So in case of input (100), the process of conversion will use the approach: 1*pow(2,2) + 0 * pow(2,1), 0*pow(2,0) = 1*4 + 0 + 0 = 4 to make its equivalent denary. Your task is to prompt the user to enter a 3-bit binary number in an integer variable. Keep in mind that the input (100 in an integer is not representing the number hundred, rather it is representing the value 4 due to binary). Validate the input first. If the input is valid then convert the binary into the square of its equivalent denary. Also check and display whether the input is representing even or odd without using mod (%) operator. Your program must be generic in terms of any 3-bit binary input.

Please remember the power rule for binary: i.e., 128, 64, 32, 16, 8, 4, 2, 1

Sample Input and output:
Enter a three-bit binary: 110
Square of the given input is: 36
Provided input is even