EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Lab 3, Spring 2020 Semester

Course:	**CSE 110 Object Oriented Programming, Section-2**
Instructor:	**Mahamudul Hasan, Lecturer, CSE Department**
Full Marks:	**TBA**
Time:	**3 Hours**

Note: There are **20** questions, write program for ALL of them.

1.	Write a program called **CheckOddEven** which prints "Odd Number" if the int variable "number" is odd, or "Even Number" otherwise. The program shall always print "bye!" before exiting.
2.	Write a program called **Fibonacci** to print the first 20 Fibonacci numbers F(n), where F(n)=F(n–1)+F(n–2) and F(1)=F(2)=1. Also compute their average. The output shall look like: The first 20 Fibonacci numbers are: 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 The average is 885.5
3.	Write a program called SquarePattern that prompts user for the size (a non-negative integer in int); and prints the following square pattern using two nested for-loops. Enter the size: 5 #

4.	Write 3 programs that prompts user for the size (a non-negative integer in int); and prints the pattern as shown:
	
	Enter the rows: 6
	
	a) # b) # # # # # # # # # #
	
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5.	Write 4 programs that prompts user for the size (a non-negative integer in int); and prints the pattern as shown:

Enter the size: 8

```
1              1 2 3 4 5 6 7 8                    1    8 7 6 5 4 3 2 1
1 2              1 2 3 4 5 6 7                  2 1    7 6 5 4 3 2 1
1 2 3              1 2 3 4 5 6                3 2 1    6 5 4 3 2 1
1 2 3 4              1 2 3 4 5              4 3 2 1    5 4 3 2 1
1 2 3 4 5              1 2 3 4            5 4 3 2 1    4 3 2 1
1 2 3 4 5 6              1 2 3          6 5 4 3 2 1    3 2 1
1 2 3 4 5 6 7              1 2        7 6 5 4 3 2 1    2 1
1 2 3 4 5 6 7 8              1      8 7 6 5 4 3 2 1    1

   (a)             (b)            (c)           (d)
```

6.	Write a program that generates a random number and asks the user to guess what the number is. If the user's guess is higher than the random number, the program should display "Too high, try again." If the user's guess is lower than the random number, the program should display "Too low, try again." The program should use a loop that repeats until the user correctly guesses the random number.
7.	Write a Java program by using three for loops to print the following pattern: 1****** 12***** 123**** 1234*** 12345** 123456* 1234567
8.	Write a Java program to find a given number is palindrome or not. Input Data: Input number: 54789 Expected Output: Not a Palindrome. Input number: 54745 Expected Output: It is a Palindrome.
9.	Write a Java program to separate even and odd numbers of a given array of integers. Put all even numbers first, and then odd numbers.

10.	Write a program to print following using while loop:
	
	i)
	
	   1
	  222
	 33333
	 4444444
	555555555

	ii)
	
	    1
	   212
	  32123
	  4321234
	543212345

11.	Write a program to calculate the sum of following series where n is the input given by the user. 1 + 1/2 + 1/3 + 1/4 + 1/5 +…………1/n
12.	Find GCD of two numbers using for loop and if statement.

13.	Write a java program using while loop to print Pascal's triangle
	Input: 6
	Expected Output:
	
	    1
	   1 1
	   1 2 1
	  1 3 3 1
	 1 4 6 4 1
	1 5 10 10 5 1

14.	Write a Java Program to Find Factorial of a Number.
15.	Write a java program to reverse a Number using a do while loop. Input Data: Input number: 54789 Expected Output The reversed number is : 98745
16.	Write a Java program to display the number rhombus structure. Test Data Input the number: 7 Expected Output:

| | ```
       1
      212
     32123
    4321234
   543212345
  65432123456
 7654321234567
  65432123456
   543212345
    4321234
     32123
      212
       1
``` |
17.	Write a Java program that takes an integer number between 1 to 7 and displays the name of the weekday. Test Data Input number: 3 Expected Output: Wednesday
18.	Write a Java program that takes a year from user and print whether that year is a leap year or not. Test Data Input the year: 2016 Expected Output: 2016 is a leap year

19.	Consider some variables d, i, s, c, b where i is an integer, d is double, s is small int, c is a character, b is byte. Do the following:
	    a) What will be the result of r = (c*b)+(c%d)*s if r is an integer variable?
	    b) What will be the result of r = (f * b) + (i / c) – (d * s) if r is a byte?

20.	Consider some variables x, y, p, q where x is an integer variable, y is double, p is a long integer, q is a floating-point variable. Find out the summation of x, y, average of x, y, p, q and subtraction of p, q without any loss of precision of values.
	
	For example:
	
	For the data set,
	int x=20;
	 double y=40.5;
	 long p=30;
	 float q=10.60f;
	
	output will be:
	
	Sum of two numbers: 60.5
	Subtraction of two numbers: 19.4