**Ex. No. 3:** **CONTROL STRUCTURES AND OPERATORS**

**(07/2/2017-12/2/2017)**

**Note: Part I and Part 2 should be recorded in your observation as directed by your mentor**

**Part-I (Who should do Part-I?)**

***Anyone who wants to clear java, hope everyone wants to…….***

a. Write a program with appropriate classes and methods (with proper selection of DATA TYPES based on requirement specified) which finds if a user is student or faculty. If student, your program should be capable of taking inputs like

1. Register Number (assume 5bits)

2. Year of Study (1/2/3/4)

3. Section

4. Scholarship, if any (Assume Formula: CGPA \*10000)

5. Total living (including academic) expenses for 4 years

6. Total number of Students in your campus

7. Total number of students in University across all campuses and all disciplines

And prints it like: You are a student with Register Number 12345 and you belong to II C and eligible for a scholarship of 92000 per year as your CGPA is 9.2 and your total living expense is 500000.6789. Total number of students in your campus is 8000 and across campus is 25000.

Else if Faculty, print “Permission denied to enter details”

b. Evaluate and code taking values from user using command line and Scanner:

a|4+c>>b&7

c. Write a program to display

**Winter**: if month is December or January or February

**Summer**: if month is March or April or May

**Spring**: if month is June or July or August

**Autumn**: if month is September or October or November

[**Hint:** can use numbers to represent months like 12 means December or enum or switch with strings (feature from java7 onwards)]

d. Write a Program to demonstrate Access Specifiers in same package and other package in Java.

**Part-II: MCQ (Who should do Part-II?)**

***Who will not love fun? If you love fun go ahead …and you can take this fun back home and continue there as well……………….***

1. What is the output of running the following code?

public class Test1 {

public static void main(String[] args) {

boolean flag = true;

int x = 5;

int result = (8 \* 2) % x;

System.out.print(!(result > 0) ^ true ^ (flag = false));

System.out.print(flag);

}

}

2. What is the output of running the following code?

public class Test2 {

public static void main(String[] args) {

int x = 0, y = 0;

x = 5 + y++;

System.out.print(x + "" + y);

x = 0;

y = 0;

x = 5 + ++y;

System.out.print(x + "" + y);

}

}

3. What is the output of running the following code?

public class Test3 {

public static void main(String [] args) {

int x = 100;

double y = 100.1;

boolean b = (x = y);

System.out.println(b);

}

}

4. What is the output of running the following code?

public class Test4 {

public static void main(String[] args) {

int x = 0, y = 0;

x = 5 + y++;

System.out.print(x + "" + y);

x = 5 + ++y;

System.out.print(x + "" + y);

}

}

5. What is the output of running the following code?

public class Test5 {

public static void main(String… args) {

int a =5 , b=6, c =7;

System.out.println(“Value is “+ b +c);

System.out.println(a + b +c);

System.out.println(“String “+(b+c));

}

}

6. What is the output of running the following code?

public class Test6 {

public static void main() {

System.out.println(“hello”;

}

}

7. What is the output of running the following code?

public class Test7 {

int myArray[]=new int[2];

public static void main(String[] args) {

myArray[0]=5;

myArray[1]=6;

System.out.println("Value at index 0"+myArray[0]);

System.out.println("Value at index 1"+myArray[1]);

}

}

8. Write about Modifiers and how access specifiers are different from them. Tabulation preferred.

**Part-III (Who should do Part-III?)**

***If you are a person who loves to challenge yourself, train yourself till you tire and in short for those who aspire to become extra intellect, this is for you***

1. In this problem, you'll create a program that guesses a secret number!

The program works as follows: you (the user) thinks of an integer between 0 (inclusive) and 100 (not inclusive). The computer makes guesses, and you give it input - is its guess too high or too low? Using bisection search, the computer will guess the user's secret number!

Here is a transcript of an example session:

Please think of a number between 0 and 100!

Is your secret number 50?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. l

Is your secret number 75?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. l

Is your secret number 87?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. h

Is your secret number 81?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. l

Is your secret number 84?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. h

Is your secret number 82?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. l

Is your secret number 83?

Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I guessed correctly. c

Game over. Your secret number was: 83

Your program should use bisection search. So think carefully what that means. What will the first guess always be? How should you calculate subsequent guesses? Hint: Your initial endpoints should be 0 and 100.