CSE 114 Midterm1- Practice Version

Fall 2024

NAME(please print legibly):_____
Your University ID number:_____
The name of the student on your LEFT:_____
The name of the student on your RIGHT:_____

- **Test duration: 1 hour and 20 minutes**. You can write on both the sides of the test.
- Please use non-erasable blue or black ink for all FINAL answers. Exams written in pencil are INELIGIBLE for regrade request.
- No books, notes, or electronic devices may be used during the exam. The last page of the exam contains some helpful information on methods from the String and Math classes.
- Any CHEATING will result in a 0 as well as being written-up on academic dishonesty. Don't place anything in a location where it might indicate that you are copying.
- Test is printed one sided, you can use both the sides of the test for your answers.
- Please do not separate exam sheets.

Question	Value	Score
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
Total	**100**	

1. Solve the following questions on number systems [5 + 5]
   a. Convert the following number in hexadecimal representation to decimal representation. Show your work for partial credit.
   10AF1

   b. Convert the following decimal number into binary representation. Show your work for partial credit.
   235

2. What will be the output of the following programs? [5 + 5]
   a.

```
public class Problem {
	public static void main(String[] args) {
		int a = 6;
		int b = a++;
		System.out.println(a);
		System.out.println(b);
		a = 6;
		b = ++a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

b.

```
public class Problem {
	public static void main(String[] args) {
		double x = 1.0;
		double y = 5.0;
		double z = x-- + (++y);
		System.out.println(x);
		System.out.println(y);
		System.out.println(z);
		}
}
```

3. What will be the output of the following programs? [5 + 5]

a.

```
public class Problem {
	public static void main(String[] args) {
		int x = 10;
		int y = 4;
		if(x < 5 && ++y == 5)
			System.out.println("x is : " + x + " and, y is:  " + y);
		else
			System.out.println("x is : " + x + " and, y is:  " + y);
	}
}
```

b.

```
public class Problem {
	public static void main(String[] args) {
		int x = 10;
		int y = 4;
		if(x < 5 || ++y == 5)
			System.out.println("x is : " + x + " and, y is:  " + y);
		else
			System.out.println("x is : " + x + " and, y is:  " + y);
	}
}
```

4. What will be the output of the following programs? [5 + 5]

a.

```
public class Problem {
    public static void main(String[] args) {
        boolean x = 1 + 4 * 4 < 5 * (4 - 3) - 1 && 4 - 3 < 5;
        System.out.println(x);
    }
}
```

b. Show the output of the following program: when the user provides the following inputs:

input an integer in the range 1 to 4 : 1
input an integer in the range 1 to 4 : 2
input an integer in the range 1 to 4 : 3
input an integer in the range 1 to 4 : -10

```
import java.util.Scanner;
public class Simple {
	public static void main(String[] args) {
		System.out.println("input an integer in the range 1 to 4");
		Scanner stdin = new Scanner(System.in);
		int intInput = stdin.nextInt();
		switch(intInput) {
			case 1:
				System.out.println("you entered ONE");
				break;
			case 2:
				System.out.println("you entered TWO");
			case 3:
				System.out.println("you entered THREE");
				break;
			default:
				System.out.println("your input out of range");
		}
		stdin.close();
	}
}
```

5. Answer the following questions: [5 + 5]

   a. Rewrite the following if statement using the conditional operator

```
if(ages >= 16)
	ticketPrice = 20;
else
	ticketPrice = 10;
```

   b. What is y after the following switch statement is executed? Rewrite the code using an if-else statement.

```
int x = 3, y = 3;
switch(x + 3){
case 6:
	y = 1;
default:
	y += 1;
}
```

6. Answer the following questions: [5 + 5]

   a. Rewrite the following program using switch statement.

```
import java.util.Scanner;
public class MyClass {
	public static void main(String[] args) {
		Scanner stdin = new Scanner(System.in);
		System.out.println("enter an integer: 1, 2, 3 or 4");
		int x = stdin.nextInt();
		if(x == 1)
			System.out.println("Freshman");
		else if(x == 2)
			System.out.println("Sophomore");
		else if(x == 3)
			System.out.println("Junior");
		else if(x == 4)
			System.out.println("Senior");
		else
			System.out.println("Imporper input");
		stdin.close();
	}
}
```

b. Show the output of the following statements (write a program to versify your results):

```
i)     System.out.println("1" + 1);
ii)    System.out.println('1' + 1);
iii)   System.out.println("1" + 1 + 1);
iv)    System.out.println("1" + (1 + 1));
v)     System.out.println('1' + 1 + 1);
```

7. Write down a program to find out the greatest common divisor for two integers. Program should prompt the user to input two integers and output the greatest common divisor. Here are some example runs: [10]

   Enter the first integer: 12
   Enter the second integer: 16
   The greatest common divisor is: 4

   Enter the first integer: 3
   Enter the second integer: 5
   The greatest common divisor is: 1

8. Write a program that simulates rolling of a pair of dice. You can simulate rolling one die by choosing one of the integers 1, 2, 3, 4, 5, or 6 at random. The number you pick represents the number on the die after it is rolled. Your program should report the number showing on each die as well as the total roll. For example: [10]

   The first die comes up 3
   The second die comes up 5
   Your total roll is 8

9. Write a program that randomly generates an integer between 1 and 12 (including 1 and 12) and displays the English month names: January, February… December for the numbers 1, 2 …12 accordingly. [10]

10. Write down a complete program to generate a random string. It should use an integer variable ***len*** and a character variable ***ulCase***. Program should prompt the user to input the values for ***len*** and ***ulCase***. The integer parameter ***len*** will be used to determine the size of the random string whereas, the parameter ***ulCase*** will determine whether the generated string will be in uppercase or in lowercase. If ***ulCase*** = 'u' or 'U' generate random uppercase string. If ***ulCase*** = 'l' or 'L' generate a lowercase random string. [10]

    Here are some example run:
    Enter the length of string: 8
    Enter the case input : L
    Random string : mwmwatvv

Enter the length of string: 5
Enter the case input : u
Random string : IYOGA