**CS201: Computer Science I**

**Midterm Practice Questions**

**Spring 2015**

1. An algorithm is defined as following what four requirements?
2. A computer must be a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with input and output.
3. Draw the von Neumann machine.
4. Convert the following signed binary number into its equivalent base 10 value: 101100112
5. Convert the following base 10 number into an 8-bit signed binary number: 2610
6. What is the information content of the letter ‘o’ in the following sentence:

“I have no special talent. I am only passionately curious”

1. What are the six principles we learned from human computer interaction?
2. Characters (char) in Java are represented as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (be specific).
3. \_\_\_\_\_\_(True/False) Variable names that are one letter long (like “a”) are a good choice as they don’t take up much room in your code.
4. Draw memory boxes to show the contents of each variable.

short y = (short) (13/2 + 5.4);

double d = (5%2) + 13.3;

1. Do each of the following evaluate to true or false?

true && true || false

(5 > 2) || (7 < 3) && (4 = = 3 || 6 != 7)

!true

1. Mark all of the control paths in the below flowchart, and then list the test cases you would use for each control path.



1. What does the following code output:

String s2 = “Jane”; String s3 = “Lizzy”;

if(s2.compareTo(s3) > 0)

Output:

System.out.println(s2);

else

System.out.println(s3);

1. Show the effect of the execution of the code below on the 400 x 400 screen at the right.

public void paint ( Graphics g )

{

super.paint (g);

g.fillOval (100, 50, 100, 200);

g.drawLine (0, 0, 200, 200);

}

1. You are writing a program to determine how many cookie trays to purchase for a party. You need the number of people attending to do the calculation. However, your user doesn’t pay very good attention, so you need to *protect your program* from bad input. Complete the following loop so that you keep asking the user to input the number of people until they finally give you an integer value.

int num\_people = 0;

final int COOKIES\_PER\_TRAY = 15;

//keep asking until they give you an integer

while(

{

}

//read in the integer

//calculate number of cookie trays if everyone gets 3 cookies

double d\_trays = (num\_people\*3)/COOKIES\_PER\_TRAY;

int trays = (int) Math.ceil(d\_trays);

//output result

System.out.println(“You should purchase “ + + “ trays of cookies”);

1. **Programming Problem:** Complete the code below for a guessing game where the user gets one chance to guess the number rolled on a 20 sided die. The code should tell the user whether or not they won the game. You may assume that any necessary import statements are already included.

public static void main(String[] args)

{

Random rand =

Scanner scan = new Scanner(System.in);