

COSC120 Final Exam Review

- 1.) Name the two theoretical machines that Charles Babbage developed.
- 2.) Give the code to declare an integer variable called x and then assign it the number 10.
- 3.) Give the code to print out "Hello World" to the console (just 1 line).
- 4.) Name three primitive types.
- 5.) What is the difference between float and double?
- 6.) What is the difference between operand and operator?
- 7.) Give an example of a binary operator and a unary operator.
- 8.) Give the code for the method Add2Ints which will add two integers, x and y, together and print that total out. You may simply declare and assign x and y arbitrary integers. Make sure you declare all variables needed and add proper comments.
- 9.) Who was Augusta Ada Byron, the Lady Lovelace, and why was she important?
- 10.) Give a detailed algorithm for getting a glass of water.
- 11.) What is an algorithm?
- 12.) What is wrong with this code:

```
import java.util.*;

public class MyProgram {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        double b = input.nextDouble("Enter b: ");
        double h = input.nextDouble("Enter h: ");
        double a = (b * h) / 2;
        System.out.println("a = " + a);
    }
}
```

- 13.) Declare a named double constant called PI that has the value 3.1459.
- 14.) What are these three symbols: !, &&, ||

- 15.) Give the truth table for two variables x and y for logical AND.
- 16.) Write the code to find the remainder r when dividing numbers x and y.
- 17.) Declare a String variable and give it the value of your name.
- 18.) What does this code snippet output:

```
int a = 5;
int b = 3;
int c = a / b;

System.out.println(c);
```

- 19.) What is a program?
- 20.) Rewrite this code to use constants and variables:

```
import java.util.*;

public class MyProgram {
    public static void main(String args[]) {
        System.out.println("a = " + 3.14 * 5 * 5);
    }
}
```

- 21.) What does this code snippet output:

```
int x = 7;
int y = 9;
int z = 3;
int a = x-y*z;
System.out.println(a);
```

- 22.) Give a detailed algorithm for making a peanut butter and jelly sandwich.

- 23.) Complete this program:

```
import java.util.*;

//This program will find the average of two numbers
public class MyProgram {
    public static void main(String args[]) {
    }
}
```

- 24.) What are two ways to add 1 to a value?

- 25.) What do == and != mean?
- 26.) Why do we use constants?
- 27.) Give the truth table for a variable x and the logical operator NOT.
- 28.) What is wrong with this code:

```
import java.util.*;

public class MyProgram {
    public static void main(String args[]) {
        private static final double PI = 3.14159;
        Scanner input = new Scanner(System.in);
        double r = input.nextDouble("Enter r: ");
        double c = 2 * PI * r
        System.out.println("c = " c);
    }
}
```

29.) What are the behaviors, attributes and questions for a class that represents a chair?

30.) Write a method xDividesY which takes in two integer and returns a Boolean. The return value is true if y is a multiple of x and false if y is not a multiple of x.

31.) Identify the parameter(s) and local variable(s) in the following method:

```
private int factorial(int n){
    int result =1;
    for (int i = 1; i<=n; i++){
        result*=i;
    }
    return result;
}
```

32.) Give two examples of a control statement.

33.) Write a description of what this Java code does.

```
int counter = 10;
for (int i=1; i <counter; i++){
    if (i<counter)
        System.out.println("We still have" + (counter-i) + "more loops");
    else
        System.out.println("This is the last loop");
}
```

34.) Write Java code for the above example using a WHILE loop.

35.) Find the errors in the following code and explain them.

```
public void run(){
    while(x<5{
        System.out.println("x=" , x)
        x--;
    }
}
```

36.) Give the code that will ask for a number from the user and then sum the numbers from 1 to the number provided by the user. Use a while loop for this.

37.) Give three possible correct configurations of an if statement.

38.) Give the code for the method isEven. Assume that you will be passing in the number to be tested as a parameter and return a boolean indicating whether or not the number was even.

39.) What is the difference between a method and a program?

40.) How do you specify that a method requires 3 integers to be passed to it?

41.) When will success be displayed in the following code?

```
if( letter == "a" || letter == "A" && (x > 5 && x < 10) ){
    println( "success!" );
}
```

42.) What is wrong with the following code:

```
public class test {
    private int n1;

    private int foo(int x){
        return n1*x;
    }

    public void run() {
        n1 = 4;
        x = 4;
        System.out.println("The answer is" + foo());
    }
}
```

43.) Given the following class definition, what methods can be called?

```
public class Student{
    private String student_name;
    private int id_number;

    public Student(String name, int id){
        student_name = name;
        id_number = id;
    }

    public String toString() {
        return (student_name + "(#" + id_number + ")");
    }

    public String getName() {
        return student_name;
    }

    public int getID() {
        return id_number;
    }
}
```

44.) What is wrong with the following code:

```
import java.util.*;

public class foo {

    private n1;
    println(n1);

    public void run() {
        Scanner input = new Scanner (System.in);
        System.out.println("Enter a number:");
        n1 = input.nextInt();

        n1 = n1*n1;
        System.out.println(n1)
    }
}
```

45.) Create a method called myRun that will get input for three integers from the user using a Scanner and then print out the result of the following method:

```
public int add3Integers (int a, int b, int c){
    return a+b+c;
}
```

}

Note that you'll be using the three integers that you got from the user as the parameters for add3Integers.

46.) Create the if statement(s) that will print out the largest number between three integer variables x, y and z.

47.) Create the method signature for the method add3Floats that will take three floating point numbers as parameters and return the sum of those three numbers.

48.) Create a class called myQuickCalculator with three methods: add2ints, sub2ints and mult2ints. add2ints will have two integers taken in as parameters and return the sum of those two integers. sub2ints will do the same, except subtracting the values and mult2ints will do the same, except multiplying the values.

49.) Give the switch statement that will take in a number (1-12) and output the corresponding month. For example, if I give you 10 it should print out October.

50.) Write JAVA code using switch statements for the code below.

```
String comment;  
System.out.print("Enter the case you want: ");  
int number = input.nextInt();  
if (number ==0)  
    comment = "You've selected 0";  
else if (number ==1)  
    comment = "You've selected 1";  
else  
    comment = "You've selected a number greater than 1";  
System.out.println(comment);
```

51.) Give an example of a string constant.

52.) Which method gives you the length of a string?

53.) Can you have two strings S1 and S2 and compare the two using S1 == S2? If not, what should you use?

54.) Give the code to walk through a string S1 and print out each letter in that string using a for loop.

55.) Give the code to declare a StringTokenizer for the string "This is a test".

56.) What is the code to print out each token in a given StringTokenizer st?

- 57.) Create the method to get 10 grades from the user and compute the average of those grades. Use a for loop for this.
- 58.) Describe 3 facets of Artificial Intelligence and what they entail.
- 59.) Discuss the problems that exist in attempting to solve the Travelling Salesman Problem.
- 60.) What are the areas involved in the Theoretical Foundations of computer science?
- 61.) What is the difference between a bit and a qbit?
- 62.) What is the Dining Philosopher's problem?
- 63.) What is the domination problem for a graph?
- 64.) Describe an area of the Operating System that we discussed in class.
- 65.) What are four things to consider when designing a game?
- 66.) Describe one of the things we discussed in class that makes a good game and why.
- 67.) Describe in detail one type of testing.
- 68.) Describe a real-world example of a software bug.
- 69.) Describe 4 facets of Software Engineering.
- 70.) Describe a software development process we talked about in class.
- 71.) What is a packet and how can its loss be detected?
- 72.) Draw and describe one of the network topologies we talked about in class.
- 73.) Describe one of the programming language classifications discussed in class and an example language in that classification.
- 74.) Of the seven areas of computer science discussed in class over the past few weeks (Artificial Intelligence, Robotics, Theoretical Foundations, Operating Systems, Programming Languages, Game Design, Networking and Software Engineering), which one interests you the most and why.