

COSC120 Final Exam Review 2010

1. Name the two theoretical machines that Charles Babbage developed.
2. What was the Antikythera Device?
3. Give the code to declare an integer variable called x and then assign it the number 10.
4. Give the code to print out "Hello Computer Science".
5. What is the difference between operand and operator?
6. Give an example of a binary operator and a unary operator.
7. Who was August Ada Byron, Lady Lovelace, and why was she important?
8. Give a detailed algorithm for getting a glass of water.
9. What is an algorithm?
10. What are these three symbols: \leq , $\&\&$, $\|$
11. Give the truth table for two variables x and y for logical AND.
12. Write the code to find the remainder r when dividing numbers x and y.
13. What does this code snippet output:

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

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

14. What is a program?
15. What does this code snippet output:

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

16. Give a detailed algorithm for making a peanut butter and jelly sandwich.

17. Complete this program:

```
import java.util.*;

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

18. What are two ways to add 1 to a value?

19. What do == and != mean?

20. Give the truth table for a variable x and the logical operator NOT.

21. What are the two dominant research areas for robotics?

22. What is an example of how robots are used today?

23. 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.

24. What's the difference between public and private as it relates to an instance variable?

25. Name three primitive types.

26. What's the difference between an object and a class?

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

28. Find the errors in the following code and explain them.

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

29. What is the correct signature for the main method?

30. Give three possible correct configurations of an if statement.

31. 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.

32. What is the difference between a method and a program?

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

34. When will success be displayed in the following code?

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

35. 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());  
    }  
}
```

36. 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;
        }
    }

```

37. What's the Turing Test?
38. 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.

39. Create the if statement(s) that will print out the largest number between three integer variables x, y and z.
40. 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.
41. 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.
42. List and describe 4 subtopics in Artificial Intelligence.
43. What is Agile Development?
44. 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.

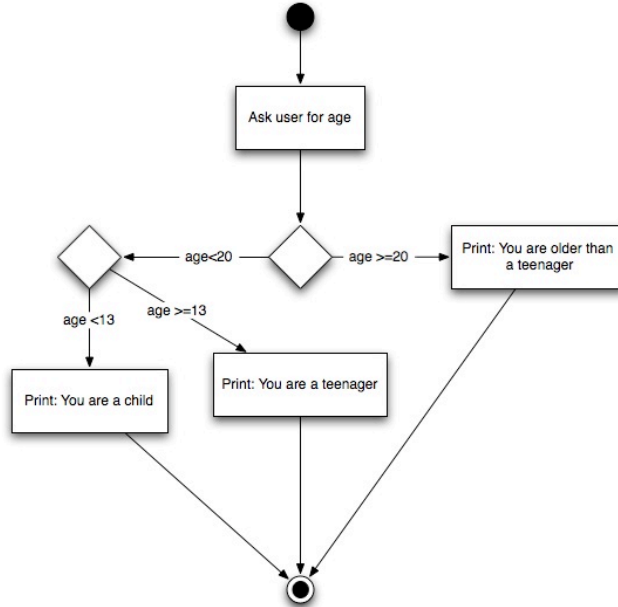
45. Write JAVA code using switch statements for the code below.

```

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);

```

46. Write the code for the following activity diagram:



47. 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");
}
```

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

49. 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.

50. Create the method to get 10 grades from the user and compute the average of those grades. Use a for loop for this.

51. What are the areas involved in the Theoretical Foundations of computer science?

52. Discuss the problems that exist in attempting to solve the Travelling Salesman Problem.

53. What are four things to consider when designing a game?

54. Describe one of the things we discussed in class that makes a good game and why.

55. Create the class for a grading program. This program should keep track of the number of As, Bs, Cs, Ds and Fs inputted by the user as well as the average grade and the number of grades entered. You should create individual methods to output the letter grades and the average (2 methods), an input method that will get a number of grades as dictated by the user, a menu method that simply prints out the menu choices and a main method. Your menu choices should be:

- 1 – Letter Grades
- 2 – Average
- 3 – Number of Grades Entered
- 4 – Grade Entry
- 0 – Quit

56. Create a method that will get 15 numbers from the user and print the largest and smallest number entered.

57. What import statement do I need for Random?

58. Give the code to print the odd numbers from 1 to 10000.

59. Give the code to declare an instance of the random number generator and instantiate said object. Use that to get a random integer from 1 to 6.

60. What is the Dining Philosopher's problem?

61. Describe one of the Programming Language classifications discussed in class and an example language in that classification.

62. Of the areas of computer science discussed in class over the past few weeks (Artificial Intelligence, Robotics, Theoretical Foundations, Operating Systems, Programming Languages, Game Design, Networking, Distributed & Parallel Computing, and Software Engineering), which one interests you the most and why.