**Loops and some other things quiz review**

**1)** Write the output of each.

**a)** for(int i = 0; i < 10; i++)

System.out.print(i + " ");

**0 1 2 3 4 5 6 7 8 9**

**b)** for(int i = 5; i > 1; i--){

System.out.println(i);

}

**5**

**4**

**3**

**2**

**c)** int b = 1234567;

while(b > 1){

System.out.print(b + " ");

b /= 10;

}

**1234567 123456 12345 1234 123 12**

**d)** int d = 2;

while(d < 20)

d \*= 2;

System.out.print(d + " ");

**32**

int d = 2;

while(d < 20){

d \*= 2;

}

System.out.print(d + " ");

**2)** Explain each part of the following loop, and describe the result of running it.

for(int i = 10; i <= 0; i++){

System.out.println(i);

}

**HEADING: declares an int i initialezed to 10, runs body of loop as long as i < 0, after body increment i**

**BODY: prints the value of i on a new line**

**RESULT/PURPOSE: doesn't do anything since 10 is not less than or equal to 0**

**3)** Explain each part of the following loop, and describe the result of running it.

int input = 1, x = 0;

while(input >= 0){

input=sc.nextInt();

x += input;

}

x -= input;

System.out.print(x);

**BEFORE LOOP: declare ints input and x, initialzed to 1 and 0**

**HEADING: keep running body of the loop as long as input > 0**

**BODY: user enteres an int, that value is saved in input, the value of x increases by the value of input**

**AFTER LOOP: the value of x decreases by the value of input**

**RESULT/PURPOSE: finds the sum of all the nonegative integers the user enters, stops when the user enters a negative integer**

**4)** Each of the following code segments may contain errors. If it does, describe what the code actually does, and write how you would change it to get the desired output.

|  |  |  |  |
| --- | --- | --- | --- |
| a) | // should print 1 -> 9  int a = 1;  while(a < 10)  a++;  System.out.print(a+” “);  **prints 10**  **switch 2 statements in body**  **add braces** | b) | //should say hi 10 times  for(int j = 0; j < 10; j++);  System.out.println(“hi”);  **prints hi once**  **remove ; on first line** |

|  |  |  |  |
| --- | --- | --- | --- |
| c) | //should print evens 0->10  int a = 1;  for(int i = 0; i < 10; i+=2){  if(i % 2 == 0)  System.out.print(i+” “);  }  **0 2 4 6 8**  **change < to <=**  **better:**  **delete int a = 1;**  **delete if statement** | d) | //should average all ints  //before user enters 0  int sum = 0, input = 0;  int count = 0;  while(input != 0){  input = sc.nextInt();  sum += input;  count + 1;  }  System.out.print(sum/count);  **error: 0/0**  **make sum a double**  **initialize input to 1**  **initialize count to -1**  **change count + 1; to count ++;** |

**5)** Write a program that asks the user to enter Strings until they enter the word "STOP". Then print out how many times each letter was used to start a word. For example:

For example:

Enter a word: Hello

Enter a word: World

Enter a word: Java

Enter a word: Happy

Enter a word: Wednesday

Enter a word: STOP

H was used 2 times

W was used 2 time2

J was used 1 time

Scanner sc = new Scanner(System.in);

String input = "";

String firstLetters = "";

while(true){

System.out.print("Enter a word: ");

input = sc.next();

if(input.equals("STOP"))

break;

firstLetters += input.toUpperCase().charAt(0);

}

for(int i = 0; i < firstLetters.length(); i++){

char curr = firstLetters.charAt(i);

if(firstLetters.indexOf(curr) == i){

int letterCount = 0;

for(int j = 0; j < firstLetters.length(); j++){

if(firstLetters.charAt(j) == curr)

letterCount ++;

}

System.out.print(curr + " was used " + letterCount

+ " time");

if(letterCount > 1) System.out.print("s");

System.out.println();

}

}

**6)** Write a program that asks the user to enter their first name, and then their last name. Then prints out their first name reversed followed by their last name reversed.

Scanner sc = new Scanner(System.in);

String firstName = "", lastName = "";

System.out.print("Enter your first name: ");

firstName = sc.next();

System.out.print("Enter your last name: ");

lastName = sc.next();

String emanTsrif = "", emanTsal = "";

for(int i = firstName.length(); i > 0; i--){

emanTsrif += firstName.substring(i - 1, i);

}

for(int i = lastName.length(); i > 0; i--){

emanTsal += lastName.substring(i - 1, i);

}

System.out.println(emanTsrif + " " + emanTsal);

**7)** What is the difference between an primitive type and a reference type?

Reference types are defined by classes, they have methods and variables

Primitive types just hold one value

The value of a primitive type is saved in a variable's memory

The data stored for a reference type is saved in a remote memory location, the value

saved in the variable's memory is the memory location number for the data

**8)** Why are reference types different than primitive types?

Primitives are a set size, so the compiler knows how much room to reserve depending on the type

**9)** Why does == work with ints but not Strings?

**10)** Does == ever work with Strings? Explain.