

ICS 3U1 – Practice Test
Loops

Name: _____

1. What three parts of a counting loop must be coordinated in order for it to work properly?

- a) initializing the counter, testing the counter, changing the counter
- b) initializing the condition, changing the condition, terminating the loop
- c) the while, the assignment, and the loop body
- d) the while statement, the if statement, and sequential execution
- e) the do, the while, and the loop body

2. If `r` is declared as a value of type `double`, then the statements:

```
double r = 30.0;
while (r >= 40.0)
{
    System.out.println("hello");
    r = r - 10.0;
}
```

will print:

- a) nothing will be printed
- b) hello
- c) hello
hello
hello
- d) an infinite loop of hello will result
- e) an error message because there is an illegal statement

3. Examine the following code:

```
int count = 1;
while ( _____ )
{
    System.out.print( count + " " );
    count = count + 1;
}
```

What condition should be used so that the code writes out:

1 2 3 4 5 6 7 8

- a) `count < 8`
- b) `count < 9`
- c) `count + 1 <= 8`
- d) `count != 8`
- e) none of the above

4. What will the following loop print when part of a complete program?

```
int i = 12;
do
{
    i = i + 1;
    System.out.print (i + " ");
}
while (i > 12);
```

- a) 12
- b) 13
- c) 12 13
- d) Nothing will be printed.
- e) An infinite loop will result, outputting 13 14 15 16 17 18 19 20 21 22...

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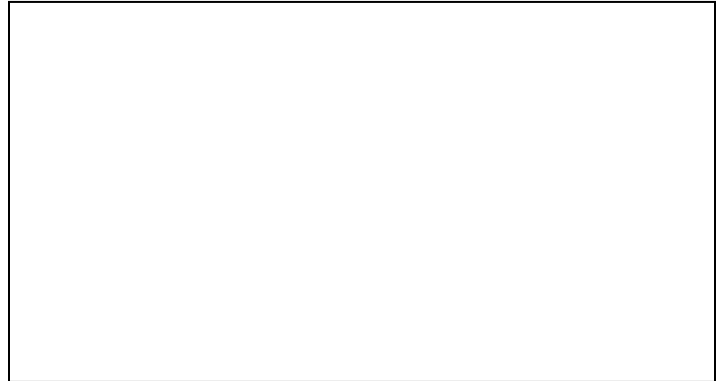
5. T F Meaningful variable names and indentation makes for easier debugging of your program.
6. T F FOR loops are used when you don't know how many times to repeat.
7. Explain the purpose of the `while` statement in Java. [K 2]

8. Explain the purpose of the `for` statement in Java. [K 2]

9. Rewrite each of the following `while` loops a using a `for` loop [A 3]

a)

```
int x=0, y=1;
while (x < 3)
{
    System.out.println(x + y);
    x = x + 1;
    y = y + 1;
}
```



b)

```
int rabbits = 3;
while (rabbits < 100)
{
    System.out.println(rabbits);
    rabbits = rabbits * 3;
}
```



[A 3]

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10. State, with reasons, which loop structure you think would be **most appropriate** for solving each problem. You do not have to actually solve the problem

[K 5]

- a) Find the sum of the cubes of the numbers from 1 to 100
- b) Repeatedly prompt the user for a password, rejecting any submissions until the correct password has been provided.
- c) Read and sum positive integers until a sentinel value of -1 has been read.
- d) Determine the number of times that a positive integer can be divided by two.
- e) Find the amount to which \$1 will grow in ten years at an interest rate of 8%.

	while, do-while, for	Reason
a)		
b)		
c)		
d)		
e)		

11. Make a program that accepts user input of positive numbers. The user enters the numbers one at a time and the program stops when the number entered is less than zero. It then displays the number of times a number larger than 10 was entered. Assume the skeleton code is given. No comments are required.

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12. Display all the multiples of <mult> between <x> and <y> (inclusive) across the screen with a few spaces in-between them. You will have to input 3 integers: the multiple, x and y. Prompt for the <mult>, the <x> and <y>

Example 1: if entered a multiple of 5 between 2 and 24 the following would get output:

2 7 12 17 22

Example 2: if entered a multiple of 7 between 3 and 30 the following would get output:

3 10 17 24

12. Create a password program in Java. Ask for the password (which is **my password**) Note the SPACE between `my` and `password`. The user has FIVE attempts at the password. After each unsuccessful attempt, display "invalid password". After the password is entered correctly, display "access granted" and stop the program. After 5 unsuccessful attempts, display "too many invalid attempts" and stop the program. Comments are not required.