

Name:

NetID:

You have 10 minutes to complete this quiz. You may not use a computer to answer the questions.

1. What is a nested loop?

[Ans] A nested loop is a structure where one or more loops are placed inside another loop.

2. State whether the following statements are true or false:

- (a) In Matlab, a **while**-loop can do anything a **for**-loop can.

[Ans] True.

- (b) In Matlab, it is possible to write a **for**-loop that can repeat a set of statements an indefinite number of times.

[Ans] False. Whereas a **while**-loop can be made to repeat a set of statements until some condition is met, a **for**-loop. This is because the bounds of the loop are only evaluated once in Matlab (unlike in many other programming languages).

3. Consider the following code fragment:

```
for p = 1 : 10

    for q = 1 : 3
        disp('I like to move it move it');
    end

    disp('You like to...MOVE IT');

end
```

When this piece of code runs to completion,

- (a) how many times will the phrase 'I like to move it move it' have been printed to the screen *in total*?

[Ans] $10 \times 3 = 30$ times

- (b) how many times will the phrase 'You like to...MOVE IT' have been printed to the screen *in total*?

[Ans] 10 times

4. Transform the following **while**-loop into a **for**-loop that prints out the same sequence of numbers:

```
x = 0;
while (x <= 50)
    disp(x);
    x = x + 2;
end
```

[Ans]

```
for x = 0 : 2 : 50
    disp(x);
end
```

A common erroneous solution that was offered by many students was the following loop (or some variant thereof):

```
for x = 0 : 50
    disp(x);
    x = x + 2;
end
```

Note that this latter solution *does not* print the same series of numbers as the original `while`-loop. This is because of the fact that the header of the `for`-loop is only evaluated once. After this point, `x` “promises” to take on the values $0, 1, 2, \dots, 50$ one at a time. The statement `x = x + 2` will temporarily increase the value of `x` by 2, but once we hit the `end` statement, `x` is assigned the next value in the series that it was supposed to take.