

# Loops: Drills

## Loops: fundamentals

- 1) The following three code snippets all achieve the same result. What is that result? Which loop do you think is best?

```
//SNIPPET 1

int i = 0;
while(i<100)
{
    cout << i << endl;
    i++
}

//SNIPPET 2
int i = 0;
do{
    cout << i << endl;
    i++;
}while(i < 100);

//SNIPPET 3
for(int i = 0; i < 100; i++)
{
    cout << i << endl;
}
```

- 2) Have the user enter an integer corresponding to the number of students in ME101. You must validate this integer to ensure that it is valid, using an appropriate loop. What are some conditions you should be checking for?
- 3) Have the user enter a positive integer, n. Print out n stars (\*), all on one line. You do not need to validate that n is positive.

## Loops: writing programs using loops.

- 1) When entering a password for an online banking account, users are often given three to five tries to get it right. If they can't get it in the correct number of tries, the account is locked. Otherwise, they'll get to see their balance. Write a program that allows the user to enter a password for their account. Compare it to one that has been previously stored (you may hard-code the value if you wish). Give the user at most 5 tries to guess it right. If they guess right, tell them their balance. Otherwise, tell them that their account is locked. HINT: you will need to think of how to exit the loop once the password has been correctly guess. **You may not use break, continue, or goto for this question.**
- 2) A prime number is a positive integer that can only be divided by itself and 1. Have the user enter a positive integer, n. Validate the integer – do not allow the program to proceed until the number is positive. Determine if n is prime.

- 3) Print out all prime numbers from 1 to 100.
- 4) A projectile exits a canon at a 45 degree angle with speed 300m/s. Print out its (x,y) position every second until it hits the ground.
- 5) You are writing an inventory control system for a restaurant that serves three dishes: fries, hummus, and cake. Fries cost \$1, hummus costs \$2, and cake costs \$3, and tax is 13%. The users, your customers, will tell you which dish they want. Assume that you begin with 10 servings of each dish, and you have to close your doors once you run out of any one of the dishes. Have the user continually enter which dish they want, ignoring bad input, until you run out of something. Output how much money you get at the end of the day. This should be the total amount in your till, including any taxes.