# Skill Mill Three

## Part 1 : Code these short loops into a practice project.

[01 – Up We Go]
Use each type of loop (do/while, while, and for loop) to print out the numbers 1-100.

[02 – Count Down]
Use a for loop to count down from 10 to 0 by twos.  Ex)  10 8 6 4 2 0

## Part 2 : What is the output of the following code segments?

| | |
|---|---|
| `int x=100;`<br>`while (x>0) {`<br>`  x=x-10;`<br>` System.out.println(x);`<br>`}` | `int num = 32;`<br>`do {`<br>`   num=num/2;`<br>`    System.out.println(num);`<br>`}while(num>1);` |
| `int x=100;`<br>`while (x>0) {`<br>`  x=x-10;`<br>`  if (x>=40) {`<br>`    System.out.println(x);`<br>`  }`<br>`  else {`<br>`    System.out.println("nope");`<br>`  }`<br>`}` | `int a=10;`<br>`int b=50;`<br><br>`for(int count=a; count<b; count=count+1) {`<br>`  System.out.println(count);`<br>`  if (count%5 == 0) {`<br>`    System.out.println("yup");`<br>`  }`<br>`}` |

## Part 3 : Describe the Code

In a line or two, describe what the following code does when executed.

```
int num=UserInput.getInteger("enter number");  //assume 1 or larger
int count = UserInput.getInteger("enter number");   //assume 1 or larger
int stuff=1;
while(count>=1) {
   stuff = stuff*num;
   count=count-1;
}
System.out.println(stuff);
```

Here's another...

```
int dice;
do {
   dice = Random.nextInt(6) + 1;
   System.out.println(dice);
}while (dice != 6);
```

## Part 4 : Code These Problems

[01 – Password]
Ask the user to enter the number 99.  If they don't enter the number 99 then you should keep asking them to enter a number until they do enter 99.

[02 – Double Up]
Ask the user to enter a number.  Ask the user how many times they would like to 'double' the number.  Use a loop to find out the result of doubling the number the specified number of times.  For example:   user enters 3 and 4, the result would be 3X2X2X2X2 = 48.  Remember that integers have a limit, so if you double too many times the program will generate an error.

[03 – Number Range]
Ask the user to enter a grade in the range 1-100.  If they enter a number outside of this range, then ask them to enter again, and again, and again, until they enter a number in the correct range.  You will probably need a double condition in your loop!

[04 – Enter Grades]
Ask the user to enter 8 grades (use a loop!).  As they are entering the grades, keep track of the sum of the grades being entered.  After all 8 grades are entered print out the sum and the average of the 8 grades.

[05 – Enter Grades Modified]
Modify the previous solution so that you ask the user how many grades they want to enter.  Then let them enter that many grades and show the sum and average.

[06 – New Password]
Ask the user to enter a new password.
The ask the user to re-enter the password for confirmation.  If they don't enter the same password then make them repeat the entire process again.  When they eventually confirm successfully you can say, "New Password Set". You will probably need a double condition in your loop but not necessarily.

[07 – New Password Modified]
Modify the previous question so when the user fails to confirm their password the program will say "Sorry, confirmation failed. Start again."

[08 – Mod Seven]
Ask the user to enter a number.  Ask the user to enter a second, larger, number.  Print out all the multiples of 7 in the range the user entered.  Use modulus!

[09 – Mod Seven Modified]
Modify the previous question and add the following behavior:
User enters 10 and 30, program says:  14   21   28   There were 3 factors 7 in that range   OR
User enters 8 and 13, programs says   There were NO multiples of 7 in that range.
The concept of a flag variable could help you here.

[10 – Repeat Repeat]
Review the tasks in the sample loop videos/code sheet and make sure that you could code each of these tasks yourself.  Try one or two of them out to confirm you can!