

I. using random numbers

- Write a program in which you declare one integer variable.
- Initialize the random number generator using the following line of code:  
`srand( time( NULL ) );`
- Then set the value of your variable to a random number by calling the `rand()` function.
- Output the value of your variable.
- Don't forget that you will probably need to add the following lines of code to the top of your program:

```
#include <iostream>
using namespace std;
#include <time.h>
#include <stdlib.h>
```

- Compile and run your program to make sure it works.
- After your program works, try running it several times. You should see different values output each time you run the program.

II. scaling random numbers

- Modify the program you just created as follows:  
after setting the value of your variable to a random number, *scale* the value of your variable to a number between 0 and 20
- *Hint*: use the modulo (%) operator
- *Reminder*: the expression:

$x \% y$   
is equal to the remainder after  $x$  is divided by  $y$

For example:

$10 \% 3$   
is equal to 1

and

$10 \% 5$   
is equal to 0

- Compile and run your program to make sure it works.

III. using for loops

- Create a new program in which you declare one integer variable.
- Use that variable as a *loop counter* for a **for** loop that counts from 0 to 5.
- Inside the body of the loop, display the value of the loop counter each iteration, on a line by itself.
- Compile and run your program to make sure it works.
- *Hint*: the output of your program should look something like this:

```
loop counter value = 0
loop counter value = 1
loop counter value = 2
loop counter value = 3
loop counter value = 4
```

#### IV. more for loops

- Modify the program above so that the output looks like this:

```
loop counter value = 1
loop counter value = 2
loop counter value = 3
loop counter value = 4
loop counter value = 5
```

- Compile and run your program to make sure it works.

#### V. arrays

- Create a new program in which you declare an array of 6 integers.
- Using a for loop, set the value of each array element to a random number.
- Using another for loop, display the value of each array element.
- Compile and run your program to make sure it works.

#### VI. more arrays

- Modify the program you created above.
- Instead of setting the value of each array element to a random number, set the value of each array element to be the same as its index.
- *Hint:* if the name of your array variable is a, then  $a[0] = 0$  and  $a[1] = 1$ , etc.
- Compile and run your program to make sure it works.