

Random Numbers:

- Random numbers are quite useful and we require them on many occasions e.g. rolling a dice.

- For the random number we can use the library:

`<cstdlib>`

- `cstdlib` has a function for random numbers:

`rand();`

- This function alone will always give the same value so we use another function:

`srand();`

- `srand()` accepts an **unsigned** integer which acts as a seed value for random numbers.

- Different seeds mean different random numbers.

- So for different seeds we can use the function `time(0)` from the library `<ctime>`.

Code:

Next page

time gives different values as time is constantly changing. `time(0)` gives the time from 1st Jan, 1970.

Day:

Date:

```
1 int main() {
2 #include <iostream>
3 #include <cstdlib> // for rand and srand
4 #include <ctime> // for time
5 Using namespace std;
```

```
int main() {
```

```
srand ( time (0)); //seed the random number generator.
```

```
cout << rand () << endl;
```

```
cout << rand () << endl;
```

```
cout << rand () << endl;
```

```
return 0;
```

```
}
```

Output:

23861

20884

21941

Yousaf

Day:

Date:

Limiting the random number:

~~We can~~ Mostly we require the random number is a certain range e.g. in dice case we need numbers from 1-6 only.

For this the formula is:

$$y = (\text{rand}() \% (\text{max Value} - \text{min Value} + 1)) + \text{min value}$$

* Min value and Max value are inclusive.

A few important points:

- Unary operators always have associativity from right to left: (++ , -- , - , !) all have right to left
- Scope:
e.g.

```
int a = 5;  
if (1) {  
    int a = 3; }  
    a++;  
    cout << a;  
}  
cout << a;
```

if this variable won't have been declared then a++ would have been implemented on a=5.

Output: 4 5

Yousuf