



# Introduction to C++

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# How to compile a C++ program



- **Windows:** Install an Integrated Development Interface (IDE).
  - Dev-C++ <http://www.bloodshed.net/dev/index.html>
- **Mac:** Install Xcode with the gcc/clang compilers.

```
g++ -std=c++11 example.cpp -o example_program OR  
clang++ -std=c++11 -stdlib=libc++ example.cpp -o example_program
```

- **Linux:** Compile your code directly from the terminal using the following command 

```
g++ -std=c++0x example.cpp -o example_program
```





# Recap exercise



# Exercise



Write a program that implements a simple "number guessing" game.

- The objective of the game is to guess whether the next number will be higher('H') (or not ('L')) than a given number.
- Starting point should be number 10.
- Subsequent numbers are randomly chosen from the range [0,20].
- Up to 4 mistakes are allowed. If this limit is reached, the game is over.



# Exercise



Write a program that implements a simple "number guessing" game.

## You will need:

1. A function that generates a random number in the range [0,max].

```
n = rand() % 20 + 1; //n in the range [0,20]
```

2. To make a different sequence of numbers, you need to specify the seed as argument to a srand(); function.

```
#include <ctime> //standard C++ library  
//time() returns the time as type time_t  
//cast time_t to int  
// time(0) gives the time(sec) since the Unix epoch  
srand((int)time(0));
```



# Exercise - Solution



```
#include <iostream>
#include <ctime>
using namespace std;

int main() {
    cout << "Starting point is number 10" << ".\n";
    cout << "Next number is higher (H) or lower (L) ? " << endl;
    int initialNum = 10, nextNum = 0, mistakes = 0;
    char guess;
    srand((int)time(0));
```



# Exercise – Solution(Cont.)



```
do {  
    do{  
        nextNum = rand() % 20+1 ;  
    }  
    while (nextNum == initialNum);  
    cin >> guess;  
    if (guess == 'H'){  
        if (initialNum < nextNum)  
            cout << "Correct! New number is: "  
                << nextNum << endl;  
        else if (initialNum > nextNum){  
            cout << "Wrong! New number is: "  
                << nextNum << endl;  
            mistakes++;  
        }  
    }  
}
```



# Exercise – Solution(Cont.)



```
if (guess == 'L'){
    if (initialNum > nextNum)
        cout << "Correct! New number is: "
            << nextNum << endl;
    else if (initialNum < nextNum){
        cout << "Wrong! New number is: "
            << nextNum << endl;
        mistakes++;
    }
    initialNum = nextNum;
}
while(mistakes < 4);

cout << "Game over: You have done 4 mistakes!" << endl;

return 0;
}
```





# Additional Resources



- <http://www.cplusplus.com/doc/tutorial/>
- <https://en.cppreference.com/w/>
- Programming: Principles and Practice Using C++, Bjarne Stroustrup (Updated for C++11/C++14)
- C++ Primer, Stanley Lippman, Josée Lajoie, and Barbara E. Moo (Updated for C++11)

