

Lec 12 Random number and class

How to generate a random
number?

```
#include <cstdlib>    // C Standard General Utilities  
                        Library
```

```
rand() // generate a random number between 0 and  
        RAND_MAX
```

```
srand(int) // initialize random number generator
```

Demo srand()

Exercise: guess the number

- Generate a random number between 1 and 20;
- Ask the user to guess the random number;
- If the guess is higher than the random number, print message “The secrete number is lower”, otherwise, print “The secrete number is higher”.
- If the guess number is the same as the random number then print “Congratulations!”

Class

build-in type vs user defined type

- build-in type
 - char
 - int
 - double
- User defined type
 - standard libraries:
string, iostream
 - types defined by
ourselves.

Why build our own data types
(classes)?

- Classes are good for directly represent ideas in code;
- The key components include:
 - data representation
 - data manipulation (operations)

Class format

```
class X {    // this class's name is X
public:
    // public members:
    //     – the interface to users (accessible by all)
    // functions
    // types
    // data (often best kept private)
private:
    // private members:
    //     – the implementation details (used by members of this class only)
    // functions
    // types
    // data
};
```

Member

- `private` members can only be used within a class;
- `public` members can be used outside the class;

Member functions

- Constructor is a special member function, should be a public function;
- It has no return type;
- Its name should be the same as the class name.

Exercise: define a date class

- What are the member variables?
- What are the member functions?