Lecture 9

Algorithms library

Algorithms library

- count_if(begin, end, function) (ejudge) (cplusplus)
- rotate(begin, new_begin, last) (ejudge) (cplusplus)
- fill(begin, end, val) (ejudge) (cplusplus)
- unique(begin, end) (ejudge) (cplusplus)
- for_each(begin, end, function) (ejudge) (cplusplus)
- generate(begin, end, gen_func) (ejudge) (cplusplus)
- next_permutation (ejudge) (cplusplus)
- prev_permutation (ejudge) (cplusplus)

Algorithms library, ejudge reference

<cstdlib> library, generating random numbers

`#include <cstdlib>` - needed for srand() and rand()
`#include <ctime>` - needed for time()
`time(0)` - get current time
`srand(seed)` - set the seed for the rand() function
`rand()` - get a random number

- *Seed* determines what sequence of random numbers will be generated by calling `rand()`
- `time(0)` returns the amount of seconds passed since *00:00, Jan 1, 1970 UTC*

<cstdlib> library, generating random numbers

```cpp
#include <iostream>
#include <cstdlib> // srand, rand
#include <ctime>   // time
using namespace std;
int main() {
    cout << time(0) << endl; // getting current time
    srand(time(0));          // changing seed for the rand()
    cout << rand() << endl;  // getting a random number
    return 0;
}
```

generating random 4-digit numbers

```
#include <iostream>
#include <cstdlib>
#include <ctime>
using namespace std;
int rng() {
    int n = rand();
    while(!(n > 999 && n < 10000)) {
        n = rand();
    }
    return n;
}

int main() {
    int n;
    cin >> n;
    srand(time(0));
    for(int i = 0; i < n; i++) {
        cout << rng() << " ";
    }
    cout << endl;
    return 0;
}
```