

Class 12

Functions

Library Functions

- Some functions are already written for us
- These are stored in libraries
- In order to use these functions, we need to tell the computer which library to include

sqrt()

- Returns the square root of a number
- Member of the cmath library

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

int main(){
    double num, root;
    cout << "Enter a number: ";
    root = sqrt(num);
    cout << "The square root of " << num << " is " << root << endl;
    return 0;
}
```

rand()

- Returns a pseudo-random integer within the range 1 to some very large number
- Member of the cstdlib library

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

int main(){
    int rnum1, rnum2;
    rnum1 = rand();           // random number
    rnum2 = rand() % 10 + 1; // random number in range 1 through 10
    cout << "rnum1 = " << rnum1 << endl;
    cout << "rnum2 = " << rnum2 << endl;
    return 0;
}
```

Example 1

- Goal: Simulate rolling a die five times
- Plan: Call `rand()` five times in a loop
- Question: How do we limit the random number range to be 1 to 6?

srand()

- Initializes the random number generator function rand() to some seed value
- Member of the cstdlib library
- We use time(0) as the seed value
- time() is a member of the ctime library

Functions

- A function is a block of code which runs only when it is called
- You can pass data, known as parameters, into a function
- Functions are used to perform certain actions, often just one specific task

Functions

- Functions have three parts:
 - name
 - return type
 - input arguments

```
int diffSquares(int a, int b){  
    int result = (a * a) - (b * b);  
    return result;  
}
```


Functions

- Functions have three parts:
 - name
 - return type
 - input arguments

```
void greet (string name){  
    cout << "Hello " << name << endl;  
}
```

Calling Functions

- A function call is an expression containing the function name followed by the function call operator ().
- If the function has been defined to receive parameters, these values are listed inside the parentheses of the function call operator.

Example 2

- Using `greet()`, say hello to two different people.

Example 3

- Using `diffSquares()`, compute the difference of the squares of two integers.

Example 4

- Write a function computing the cube of an integer.

Example 5

- Write a function testing whether two integers are both odd. If both are odd, return true, otherwise return false.