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

```cpp
#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

```cpp
#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

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

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

```cpp
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.