FAST National University of Computer and Emerging Sciences Peshawar

OOP Lab # 2.3

DEPARTMENT OF COMPUTER SCIENCE

C++ Programming

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Contents

C++ Math

C++ has many functions that allows you to perform mathematical tasks on numbers.

Max and min

The max(*x*,*y*) function can be used to find the highest value of *x* and *y*:

Example

```
cout << max(5, 10);
```

Max and min…

And the min(*x*,*y*) function can be used to find the lowest value of *x* and *y*:

Example

```
cout << min(5, 10);
```

Max and min Example

```
#include<iostream>

using namespace std;

int main()
{

    cout<<"Maximum Number is: "<<max(5,8)<<endl;
    cout<<"Manimum Number is: "<<min(5,8)<<endl;

    return 0;
}
```

```
Maximum Number is: 8
Manimum Number is: 5
```

C++ <cmath> Headers

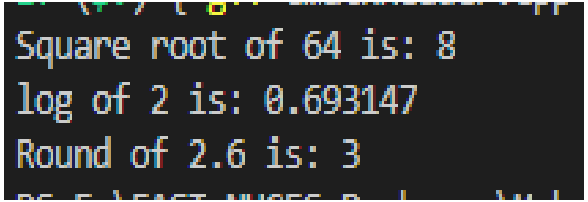
Other functions, such as sqrt (square root), round (rounds a number) and log (natural logarithm), can be found in the <cmath> header file:

Example

```
// Include the cmath library
#include <cmath>

cout << sqrt(64);
cout << round(2.6);
cout << log(2);
```

C++ <cmath> Headers Example

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

int main()
{

    cout<<"Square root of 64 is: "<<sqrt(64)<<endl;

    cout<<"log of 2 is: "<<log(2)<<endl;

    cout<<"Round of 2.6 is: "<<round(2.6)<<endl;

    return 0;
}
```



Other Math Functions

A list of other popular Math functions (from the <cmath> library) can be found in the table below:

Function	Description
abs(x)	Returns the absolute value of x
acos(x)	Returns the arccosine of x
asin(x)	Returns the arcsine of x
atan(x)	Returns the arctangent of x
cbrt(x)	Returns the cube root of x
ceil(x)	Returns the value of x rounded up to its nearest integer
cos(x)	Returns the cosine of x

Other Math Functions…

cosh(x)	Returns the hyperbolic cosine of x
exp(x)	Returns the value of E^x
expm1(x)	Returns e^x -1
fabs(x)	Returns the absolute value of a floating x
fdim(x, y)	Returns the positive difference between x and y
floor(x)	Returns the value of x rounded down to its nearest integer
hypot(x, y)	Returns sqrt(x^2 +y^2) without intermediate overflow or underflow

Other Math Functions…

fma(x, y, z)	Returns x*y+z without losing precision
fmax(x, y)	Returns the highest value of a floating x and y
fmin(x, y)	Returns the lowest value of a floating x and y
fmod(x, y)	Returns the floating point remainder of x/y
pow(x, y)	Returns the value of x to the power of y

Other Math Functions…

sin(x)	Returns the sine of x (x is in radians)
sinh(x)	Returns the hyperbolic sine of a double value
tan(x)	Returns the tangent of an angle
tanh(x)	Returns the hyperbolic tangent of a double value

References

- https://beginnersbook.com/2017/08/cpp-data-types/
- https://www.geeksforgeeks.org/c-data-types/
- http://www.cplusplus.com/doc/tutorial/basic_io/
- https://www.geeksforgeeks.org/basic-input-output-c/
- https://www.w3schools.com/cpp/default.asp
- https://www.javatpoint.com/cpp-tutorial

THANK YOU