

1806ICT Programming Fundamentals

Data Types, Operators & Expressions

1. The C math library function `sqrt(x)` can be used to determine the square root of `x`, where `x` is a type `double`. This function is defined in the `<math.h>` library, so you will need to `#include <math.h>` in your program. The following example program shows the usage of the `sqrt()` function.

```
#include <stdio.h>
#include <math.h>

int main ()
{
    printf("Square root of %f is %f\n", 4.0, sqrt(4.0) );
    printf("Square root of %f is %f\n", 5.0, sqrt(5.0) );

    return 0;
}
```

Now, write a program that solves the polynomial equation $ax^2 + bx + c = 0$

Sample Run:

Input			Output	
a	b	c	X1	X2
1	2	1	-1.0	-1.0
2	4	1	-1.707	-0.293

2. Write a program that computes the score needed on a final exam (out of 100) to achieve a desired grade in a course. The program should interact with the user as follows:

Enter desired grade> B

Enter minimum score required for the desired grade> 79.5

Enter current average score in course> 74.6

Enter how much the final exam counts as a percentage of the course grade> 25

You need a score of 94.20 on the final exam to get a B.

In the example shown above, the final exam counts as 25% of the course grade.

Sample Run:

Input				Output
Desired grade	Min score	Current avg. score	Final exam %	
B	79.5	74.6	25	94.2
A	85.0	80.3	50	89.7

