Computer Programming

Lab6

May 2, 2025

GIST

Ex3

- Write a program that prints 50 random numbers between 1 and 100. Including 1 and 100. Print 10 numbers per line.

Ex3

- **Program output**

```
[ohyong@cse ~/cp/Lab6]$ vi ex6_3.c
[ohyong@cse ~/cp/Lab6]$ gcc ex6_3.c -o ex6_3
[ohyong@cse ~/cp/Lab6]$ ./ex6_3
 56   2  58  92   1  62  26   7  88  28
 68  33  14  56   8  75  36  83   1  28
 11  12   1  85  54  78  82  82  26  33
  3  33  86  60  24  86  73   1  44  12
 80  12  45  94  67   4  20  55  86  20
[ohyong@cse ~/cp/Lab6]$ ./ex6_3
 80  93  19  97  65  76  41  89  53  93
 19  60  88  47  34  50  30  46  34  25
 82   2  32   1  95  42   3  27   1  34
  1  32  27  19  80  43  47  72  32  99
 64   2  10  52  48  43   1  78  40  35
```

3

Extra

- Write a program that solves a quadratic equation of the form $ax^2 + bx + c = 0$. <u>Use</u> the sqrt() function.
  - ✓ In C, mathematical functions are defined in the math.h header file , and the GCC compile option -lm is used to link the math library.
  - ✓ Take three inputs: a, b, and c.
  - ✓ Calculate the discriminant $D = b^2 - 4ac$.
  - ✓ If $D > 0$, the equation has two distinct real roots, and the program should compute and print them.
  - ✓ If $D = 0$, the equation has one real root (a double root), and the program should compute and print it.
  - ✓ If $D < 0$, the equation has no real roots, and the program should print a message indicating that.
  - ✓ You can use the formula for the roots of a quadratic equation:
    - Root 1: (-b + √(b² - 4ac)) / 2a
    - Root 2: (-b - √(b² - 4ac)) / 2a

Extra

- **Program output**

```
[ohyong@cse ~/cp/Lab6]$ vi ex6_extra.c
[ohyong@cse ~/cp/Lab6]$ gcc ex6_extra.c -o ex6_extra -lm
[ohyong@cse ~/cp/Lab6]$ ./ex6_extra
Enter a: 1
Enter b: -3
Enter c: 2
Root 1: 2.00
Root 2: 1.00
[ohyong@cse ~/cp/Lab6]$ ./ex6_extra
Enter a: 1
Enter b: -6
Enter c: 9
Double root: 3.00
[ohyong@cse ~/cp/Lab6]$ ./ex6_extra
Enter a: 1
Enter b: 4
Enter c: 8
No real roots exist.
```

5

Submission

- **Submit to server**

Lab #

Class #

At the end of the Lab6, submit your C sources file by typing

~gs1401/bin/submit Lab6_3 ex6_3.c ex6_extra.c   // by Friday 10:50

You may check that you have submitted your source code correctly by typing

~gs1401/bin/submit -check