세계 속의 빛
이공계 대학

Computer Programming

Lab8

May 13, 2025

Ex1

- Given a non-negative integer *n*, write a *recursive* function to compute the factorial of *n*.

Ex1

- **Program output**

```
[ohyong@cse ~/cp/Lab8]$ vi ex8_1.c
[ohyong@cse ~/cp/Lab8]$ gcc ex8_1.c -o ex8_1
[ohyong@cse ~/cp/Lab8]$ ./ex8_1
Enter a number: 5
120
```

```
[ohyong@cse ~/cp/Lab8]$ ./ex8_1
Enter a number: 0
1
```

```
[ohyong@cse ~/cp/Lab8]$ ./ex8_1
Enter a number: 7
5040
```

Ex2

- ***(Euclidean Algorithm - Recursion)*** Ex1 of Lab6 is an iterative version that implements the Euclidean algorithm using a loop. Convert the iterative version into a *recursive* version (*recursion*).

Ex2

- **Program setup**
  - Step 1: Ask the user to enter two positive integers a and b, and read them using scanf().
  - Step 2: Implement a recursive function gcd_r (M, N) to execute the Euclidean algorithm using recursion. Note that the function has to call itself.
  - Step 3: Print the greatest common divisor of the input integers, which is returned by gcd_r (a, b).

Ex2

- **Program output**

```
[ohyong@cse ~/cp/Lab8]$ vi ex8_2.c
[ohyong@cse ~/cp/Lab8]$ gcc ex8_2.c -o ex8_2
[ohyong@cse ~/cp/Lab8]$ ./ex8_2
Enter two positive integers: 48 18
gcd = 6
```

```
[ohyong@cse ~/cp/Lab8]$ ./ex8_2
Enter two positive integers: 56 98
gcd = 14
```

Submission

- **Submit to server**

Lab #

Class #

At the end of the Lab8, submit your C sources file by typing

~gs1401/bin/submit Lab8_2 ex8_1.c ex8_2.c // by Thur. 11:50

~gs1401/bin/submit Lab8_3 ex8_1.c ex8_2.c // by Friday 10:50

~gs1401/bin/submit Lab8_4 ex8_1.c ex8_2.c // by Friday 11:50

~gs1401/bin/submit Lab8_5 ex8_1.c ex8_2.c // by Friday 13:50

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

~gs1401/bin/submit -check