COM 101
INTRODUCTION TO PROGRAMMING

LAB 1- INTRODUCTION

October 09,2015

Agenda

➢ Weekly Lab Schedule

➢ Objectives

➢ Coding Environment

• Create, Save, Compile, Run a project a with CodeBlocks

Compile and Run a project from command line

Debugging

➢ Examples (together)

➢ Exercises (on your own)

➢Q&A

General Information

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For any general questions about the course, use my Office Hours or send me an email for having an appointment beyond office hours!

General Information(cont.)

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Weekly Lab Schedule(Tentative)

W	D	Topics Covered
1	2.10.2015	**No Lab**
2	09.10.2015	**LAB1** Introduction to Coding Environment, Built-Compile-Debug Processing, First Program in C)
3	16.10.2015	**LAB 2** (Mathematical Applications, Operators Preceding)
4	23.10.2015	**LAB 3** (IF, ELSE-IF, ELSE, SWITCH-CASE Applications)
5	30.10.2015	**LAB 4** (WHILE, FOR, DO-WHILE, BREAK, CONTINUE Applications)
6	06.11.2015	**LAB 5** (Function Declaration, Definition, Invocation)
7	13.11.2015	**LAB 6** (Parameter Passing, Recursion)
8	20.11.2015	**No Lab – Midterm Exam**
9	27.11.2015	**LAB 7** (Arrays, Multidimensional Array Applications)
10	04.12.2015	**LAB 8** (Pointers)
11	11.12.2015	**LAB 9** (Pointers)
12	18.12.2015	**LAB 10** (Structures)
13	25.12.2015	**LAB 11** (Formatted Input / Output)
14	01.01.2015	**New Year's Day (No Lab)**

Lab1 - Objectives

- Being familiar with an IDE : CodeBlocks

- Learn how to
  - create, save a project ?
  - write a code by using good practices?
  - build and run an C program with an IDE and command line?
  - debug a C program?

- Learn common programming errors

Coding Environment

Let's introduce the IDE:

Examples

1 - Summation of Integers!

- Open a project
- Write sumIntegers.c file by using good practices (comments, naming convention)
- Build and Run it!
- Debug it!

Examples(cont.)

- Summation of Integers- version2

  Update previous code by taking values from user.
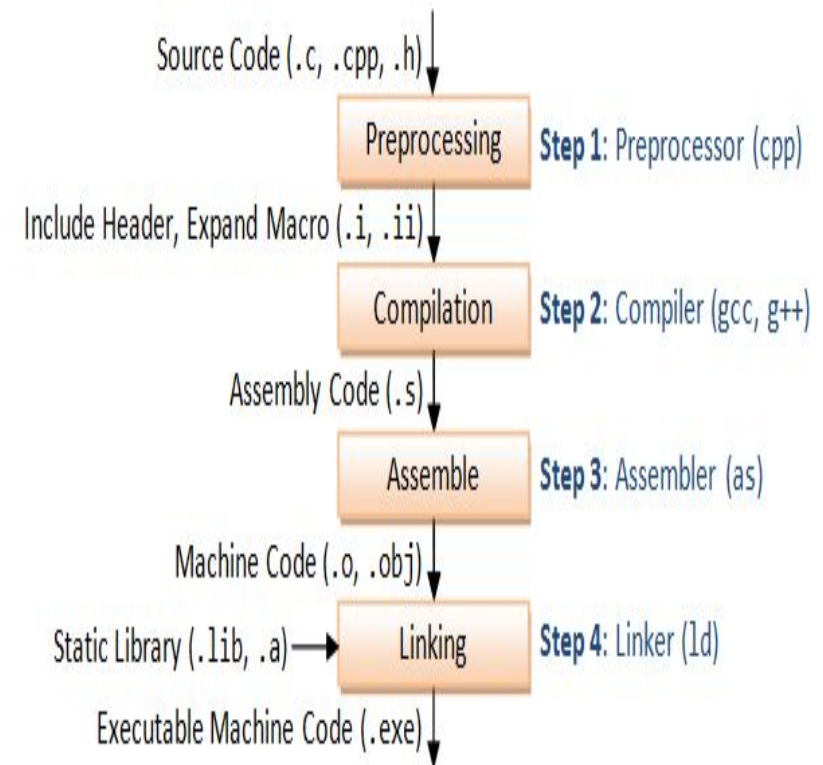
Examples(cont.)

- **Make a Sound** (bip bip .. bip)

Examples(cont.)

- **Calculate Area of a Square**

GCC Compilation Process

Source Code (.c, .cpp, .h)

Preprocessing — **Step 1**: Preprocessor (cpp)

Include Header, Expand Macro (.i, .ii)

Compilation — **Step 2**: Compiler (gcc, g++)

Assembly Code (.s)

Assemble — **Step 3**: Assembler (as)

Machine Code (.o, .obj)

Static Library (.lib, .a) → Linking — **Step 4**: Linker (ld)

Executable Machine Code (.exe)

Compile it by gcc -->sample cmd line.

```
C:\Program Files (x86)\CodeBlocks\MinGW\bin>mingw32-gcc C:\sources\square.c -o C
:\sources\square.exe

C:\Program Files (x86)\CodeBlocks\MinGW\bin>
```

Exercises

1- Write a C program that calculates the number of kilometers a car when travelling with a velocity (the velocity and travelling time is specified by the user). Assume that the velocity of the car(km/h) is constant during the motion and the time is in hours. Run it by using both IDE and gcc compiler .

```
D:\C_projects\displacement.exe

Enter the velocity:
20
Enter the time:
3
Displacement is 60.

Process returned 20 (0x14)     execution time : 6.127 s
Press any key to continue.
```

2- Write a C program that produces the following output.

Hint : You can use the some escape characters.

```
Just a simple windows drawing with C!

****************
*       *      *
*       *      *
*       *      *
****************
*       *      *
*       *      *
*       *      *
****************
```