Part Three

03

Environment Setup

Local Environment Setup

- Assembly language is dependent upon the instruction set and the architecture of the processor.
- In our course, we focus on x64 assembly in Windows.
- To set up assemly environment, you will need −
  - A PC running Windows 10 or above.
  - A C/C++ development set up and ready to go.
  - A modern version of Visual Studio. I am using 2022.
- The Netwide Assembler compiler, for compiling our assembly code itself.

Why NASM

- There are many good assembler programs, such as −
  - Microsoft Assembler (MASM)
  - Borland Turbo Assembler (TASM)
  - The GNU assembler (GAS)
- We will use the NASM assembler, as it is −
  - Free. You can download it from various web sources.
  - Well documented and you will get lots of information on net.
  - Could be used on both Linux and Windows.

Installing NASM

★ For checking whether you already have NASM installed, take the following steps −

- Open a Command Prompt terminal.
- Type nasm -v and press ENTER.
- If it is already installed, then a line like, NASM version 2.16 compiled on Dec 20 2022. Otherwise, you need to install NASM by going to

https://www.nasm.us/pub/nasm/releasebuilds/2.16/win64/.

Installing NASM

- To install NASM, take the following steps
  - Download the nasm-2.16-installer-x64.exe from the above link and double click it.
  - Follow the instructions.
  - Set up the environment variable by adding the install path to Path.

Why Should I Care about Assembly?

- Dropping to assembly has helped me figure out bugs in release code under real production scenarios.
- Possible performance optimizations, or understanding how to modify your code to take better advantage of compiler optimizations.
- Without understanding assembly, never be able to understand the reasoning behind some of your decisions at the higher-level of abstractions.
- A better understanding of unexpected behaviour.