

Operating Systems - Monsoon 2022

September 10, 2022

Assignment 0 (Total points: 50)

Due date: Sept 20. Time: 23:59 Hrs.

1 Setting-up Artix OS VM and Compiling the OS kernel (total points: 25)

The first assignment (A0) requires you to setup your testbench VM. The VM should not require too much resources – approximately 4 GB RAM, with 2 virtual CPU cores and about 20 GB of hard drive space.

You need to install Artix-base on that following the instructions on the site. The installation must be done using the text mode instructions (and not by using the GUI).

To make your life easier you would need to do the following after the installation:

1. Enable ArchLinux repositories.
2. Install the following packages: binutils, elfutils, gcc, gdb, make, automake, autoconf, yasm and vim.

Thereafter, you would require downloading the stock linux kernel and compiling and installing it on your testbench. Ensure that it boots up!

What To Submit

- A demonstration of the VM and the installed packages (no need to upload anything)

Grading Rubric:

- UEFI enabled VM booting artix. The students should be able to show the correct partitioning of the virtual hard drive – 12.5 points
- VM with running stock kernel (that is compiled) – 12.5 points

2 An Assembly Program (total points: 25)

Write a program in x86-64 assembly (in 64-bit mode) that:

1. Takes a number and a string as input from the user's console
2. Prints the same number and same string to the user's console

What To Submit

1. A single .asm/.s file
2. A Makefile to build the .asm file

Grading Rubric

- Assembly Program (25 points):
 - Program successfully building – 4 points
 - Correctly working call to `scanf()` – 7 points
 - Correctly working call to `printf()` – 7 points
 - Program returning successfully – 7 points

Late Submission Policy

- Submitted on or before Sept 20, 2022 (23:59 hrs) – No points deducted.
- Submitted after Sept. 20, 2022 but on or before Sept. 22, 2022 (23:59 hrs) – 5 points deducted.
- Submitted after Sept. 22, 2022 but on or before Sept. 24, 2022 (23:59 hrs) – 10 points deducted.
- Submitted after Sept. 24, 2022 – no points shall be awarded.