

Computer Hardware



SCHOOL OF INFORMATION TECHNOLOGY
ADMINISTRATION & SECURITY

TERM	NAME – Student ID	COURSE CODE	WEIGHT
	DEV-DASONI4	CSN105	8%

Lab Objectives

Upon completion of this lab, you will be able to perform the following:

- Identify the components of a computer
- Install and replace computer system components
- Access and configure the BIOS

Lab Materials

- Pre-Lab Video: [Explanation](#)
- [PC Building Simulator: Education Edition](#)

Lab Instructions

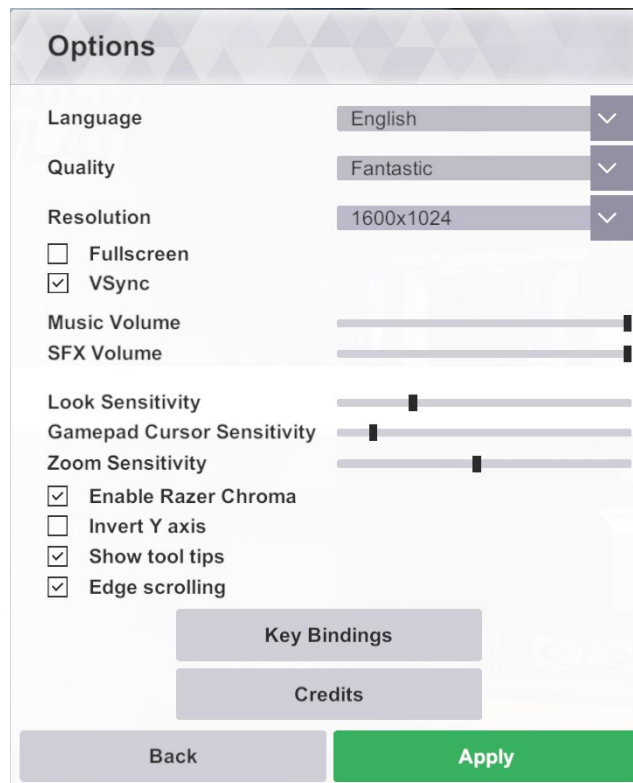
- Install PC Building Simulator: Education Edition
- Launch software and perform lab
- Enter your name and student ID above (Example: david – dtrinh)
- Answer questions and add screenshots into the corresponding textboxes
- Save the file on your computer for future reference
- Save the file again as a “.pdf” file
- Submit the PDF file for grading

Academic Integrity Declaration

By beginning this lab, I affirm that I will not give or receive any unauthorized help in this lab and that all work provided will be my own. I agree to abide by Seneca's Academic Integrity Policy, and I understand that any violation of academic integrity will be subject to the penalties outlines in the policy.

Part 1: Configure Simulator Options

1. Launch PC Building Simulator: Education Edition
2. Select the gears icon to change the software options
3. Select “Quality”: set the highest quality possible
4. Select “Resolution”: set it to an appropriate size
5. Uncheck “Fullscreen”
6. Click “Apply” to save the settings



Part 2: How to Build a PC

1. Launch “How to Build a PC”
2. Navigate through the tutorial and familiarize yourself with how to install components
3. Complete the tutorial



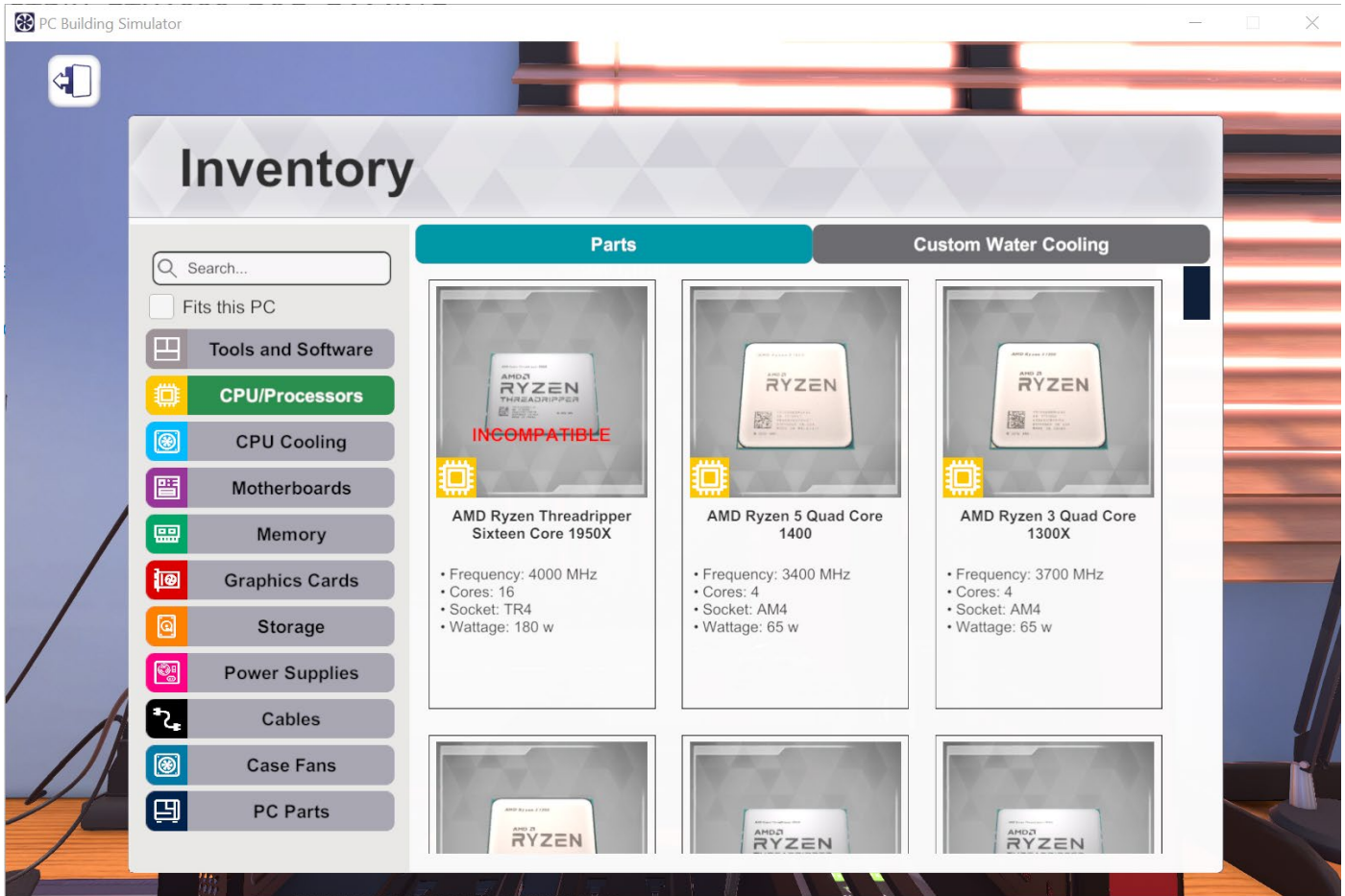
Your work is NOT saved in this mode. Exiting will erase all your work!

Part 3: Motherboard

1. Launch “Free Build”. This mode will automatically save your work.
2. Navigate to the PC sitting on the table to the left



3. We will install a motherboard in the computer case
4. Select the computer case on the table to work with it
5. Remove the side panels before installing the motherboard
6. Select the “INSTALL” button to view a list of available categories



7. Select the motherboard category and view the available models

Why are some motherboards incompatible? [1 mark]

Because of their form factor reasons, some motherboards won't fit into some cpu cases.

8. Install motherboard: "GIGABYTE X570 AORUS XTREME(rev 1.0)"

9. Use the manufacturer's website to answer the following questions:

What is the manufacturer's website? [1 mark]

<https://www.gigabyte.com/Motherboard/X570-AORUS-XTREME-rev-10>

Which keyboard key is used to enter the BIOS setup? [1 mark]

<Delete> key is used to access BIOS setup during POST when the power is turned on.

What does 5 short beeps indicate? [1 mark]

Processor failure

What is the version of the latest BIOS update? What does the update provide? [1 mark]

F35d is the version of the latest BIOS update. The update provides capsule BIOS support starting this version.

Part 4: Central Processing Unit

1. We will install a CPU onto the motherboard
2. Select the CPU/Processors category and view the available models

Why are some CPUs not supported? [1 mark]

FORM FACTOR REASONS - Because some processors are manufactured in that way that can only fit into some specific motherboard sockets.

3. Install CPU: "AMD Ryzen 9 Sixteen Core 3950X"
4. Use the manufacturer's website to answer the following questions:

What is the manufacturer's website? [1 mark]

<https://www.amd.com/en/products/cpu/amd-ryzen-9-3950x>

Explain how to determine if this CPU supports multithreading. [1 mark]

So, for multithreading the condition is that the threads should be twice to that of cores and over here its 16 cores and 32 threads. So the condition satisfies here. Hence, supports multithreading.

What type of system memory is supported? [1 mark]

DDR4

 **Remember to close the latch after placing the CPU in the socket.**

5. Install an appropriate CPU Cooling

 **Remember to add thermal paste under the "Tools and Software" category.**

Part 5: Memory

1. Using the motherboard's manual, determine how 2 memory modules should be installed into the sockets.
2. Select the memory category and view the available models
3. Install memory: "G.SKILL Trident Z (Black) 8 GB 4400 MHz"



Remember to open the memory clips before installing the memory.

4. Use the manufacturer's website to answer the following questions:

What is the manufacturer's website? [1 mark]

<https://www.gskill.com/product/165/166/1536658028/F4-4400C18D-16GTZR>

Memory can be sold in different kits. Which kit does this memory come in? [1 mark]

Trident Z RGB DDR4 memory kit.

Part 6: Storage Devices

1. Select the storage category and view the available models
2. Install "Seagate BarraCuda 4TB 256MB Cache"
3. Also, install "ADATA XPG SPECTRIX S40G RGB M.2 2TB"
4. Use the manufacturer's website and our discussions to answer the following questions:

Seagate BarraCuda 4TB 256MB Cache

What is the manufacturer's website? [1 mark]

<https://www.seagate.com/in/en/products/hard-drives/barracuda-hard-drive/>

What physical interface does this hard drive use? [1 mark]

Serial ATA interface.

What is the rotational speed (RPM) of this hard drive? [1 mark]

7200 RPM.

ADATA XPG SPECTRIX S40G RGB M.2 2TB

What is the manufacturer's website? [1 mark]

<https://www.xpg.com/us/xpg/610>

What physical interface does this storage drive use? [1 mark]

PCIe Gen3x4

What is the rotational speed (RPM) of this storage drive? [1 mark]

To start with, SSDs don't have RPM speed cause they have no movable parts. But they have read and write speeds and this SSD storage device has 3500/3000 MBs speed.

Explain a reason for installing 2 internal drives. [1 mark]

The core reason for installing 2 internal drives is to increase the storage space which eventually will increase the hard drive speed. Moreover, the other advantage for this is that we can install second OS and also can use it for backup purposes.

Part 7: Graphics Card

1. Select the Graphics Cards category and view the available models
2. Install "ASUS ROG Strix GeForce GTX 1080 OC Edition"



Remember to remove the back panels to make space for the ports. After installing the graphics card, make sure you install a PCI lock to hold the card in place.

3. Use the manufacturer's website and answer the following questions:

What is the manufacturer's website? [1 mark]

<https://rog.asus.com/graphics-cards/graphics-cards/rog-strix/rog-strix-gtx1080-o8g-gaming-model/>

What output interfaces are available? [1 mark]

Native DVI-D, Native HDMI 2.0b, Native DisplayPort 1.4

How many monitors can be connected? [1 mark]

We can connect 5 monitors.

What is the version of the latest driver for Windows 10x64? [1 mark]

Version 472.12

Part 8: Power Supply

1. Select Power Supplies category and view the available models
2. Install an appropriate power supply for the PC



Remember to remove the PSU mount before installing the power supply. Once the PSU is installed, remember to install this PSU mount back on the case.

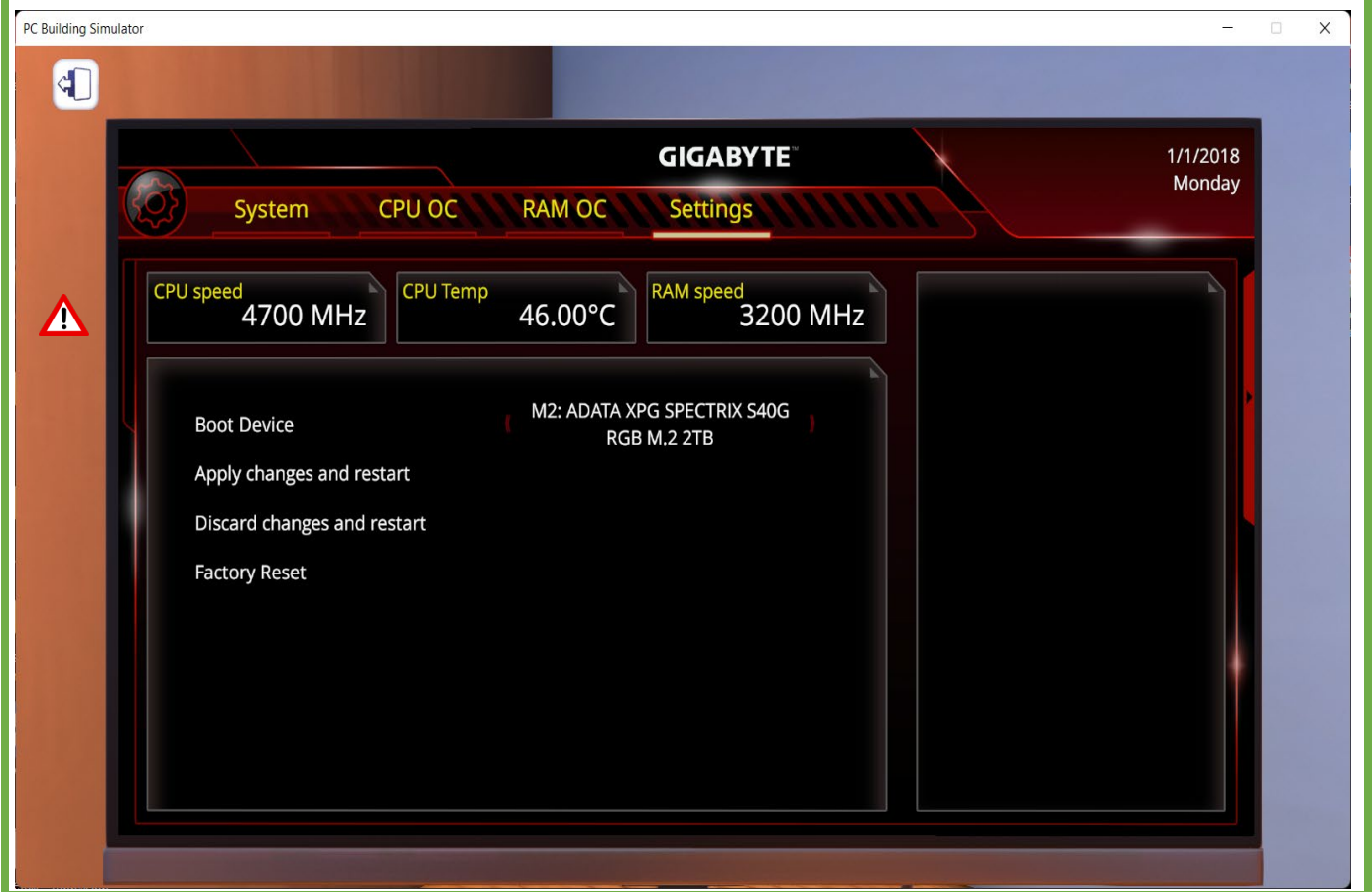


The PC Status should change from “Incomplete case” to “No OS installed”. If not, review the components to ensure nothing is missing.

Part 9: BIOS

1. Power on the PC using the button located on the top of the case
2. Click on the monitor to view the system boot
3. Note the keys that need to be pressed to enter the BIOS
4. Enter the BIOS and navigate until you find “Boot Device”
5. Ensure the M2: ADATA XPG SPECTRIX S40G RGB M.2 2TB” is selected

Screenshot 9.0: Boot Device [1 mark]



- **Make sure the screenshot is large enough to show the required information.**

6. Select “Apply changes and restart”
7. Power off the PC

Part 10: Software

8. Select Tools and Software category and view the Parts tab
9. Select the “USB Drive – USB Drive for OS and program installation”
10. Install the USB in an appropriate port on the case
11. Power on the PC using the button located on the top of the case
12. Click on the monitor to view the system boot into an OS
13. Using the “Add/Remove Programs” icon, install the following applications:
 - Part Ranking
 - System Info
 - Will it run?
14. Launch “Part Ranking” and answer the following questions:

What is the highest ranked Graphics Card? [1 mark]

ASUS ROG Strix GeForce RTX 3090 O24G

What is the lowest ranked processor? [1 mark]

Intel Celeron G3900

15. Launch “System Info” and answer the following questions:

What is the “Case Temperature”? [1 mark]

26.44 Degree Celsius

What is the “Transfer Speed” of the M.2 storage drive? [1 mark]

3250 MB/s

16. Launch “Will it run?” and answer the following questions:

Does this PC meet the recommended spec for “DOTA 2”? [1 mark]

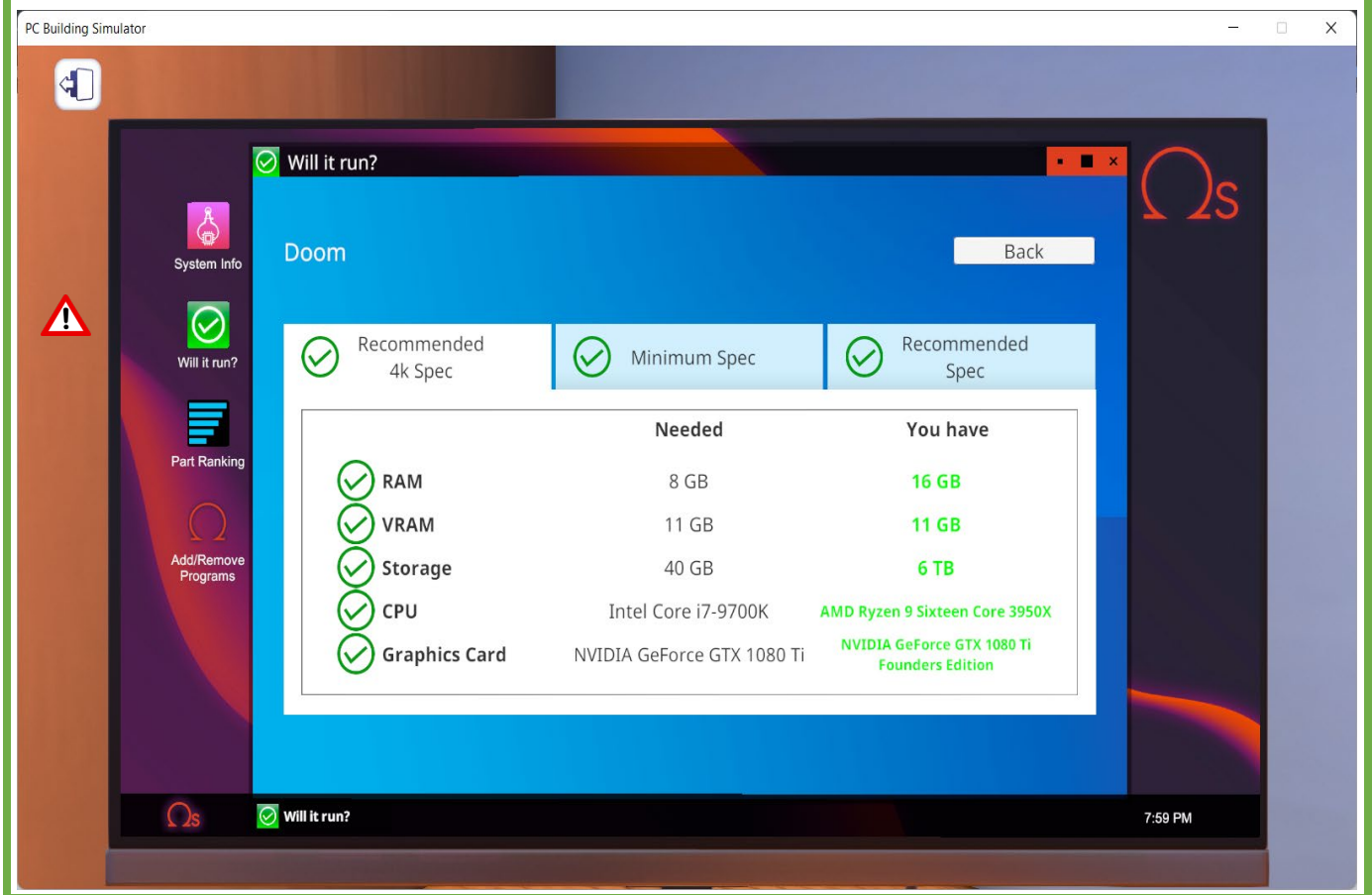
YES

What specs need to be updated to meet the recommend 4k spec for “Doom”? [1 mark]

VRAM – I have 8GB and should be updated to 11GB

Graphics Card – I have ASUS ROG Strix GeForce GTX1080 OC Edition and need to update to NVIDIA GeForce GTX 1080 Ti

- Update the PC to meet the recommended 4k spec for Doom.

Screenshot 10.0: Doom 4K spec with new video card [1 mark]

- **Make sure the screenshot is large enough to show the required information.**