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Hardware shopping

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4.1 Introduction

We have studied the main components of a personal computer (PC) in the main course. As a computer science student, you will eventually get a chance to assemble a PC either for personal use or a laboratory. In this exercise, we ask you to assemble your PC under a controlled budget.

4.2 Lab Procedures

Given each requirement, you are to search the web or advertisement and find the price. Some reference websites that can be used are:

- 原價屋 <http://www.coolpc.com.tw>
- 光華商場 <http://www.arclink.com.tw>
- PCHOME 線上購物 <http://shopping.pchome.com.tw>
- 良興 EcLife <http://www.eclife.com.tw>
- 燦坤電腦 <http://www.tkec.com.tw>
- 順發電腦 <http://www.sunfar.com.tw>
- NOVA <http://www.nova.com.tw>
- PCPARTPICKER <https://pcpartpicker.com/list/>

You are given \$55,000NTD in the following example. With this budget, you can construct an example PC with the specification shown in Table 6.1 (Prices in 2017). If you want to cut down the budget, you can start from observing the individual components carefully. For example, the **heatsink** may not be required and in some **monitors** may already contain **speakers** already. If you have extra money to spend, besides purchasing more **memory** or **hard drives**, you can add new components such as **USB camera**, **printers**, or a **scanner**.

Another website that provides PC assembly service is **PC-PARTPICKER**. This website provides current market price mined from various vendors/providers and also checks the compatibility of your hardware (see Figure 4.1. Moreover, it provides benchmark numbers for your reference.

You may export your result in multiple formats. Below is an example of exporting your hardware list in pure text format.

Component	Description	Price
CPU	Intel i7-8700 【6 核/12 緒】 3.2GHz(↑4.6GHz)/12M/UHD630/65W	10600
Motherboard	華碩 TUF Z370-PRO GAMING 【獨家軍規-五年】 (ATX/1D1H/SLI/ I 網)	4490
RAM	金士頓 16G*2 DDR4-2933 HyperX FURY(黑)	9650
HDD	Intel 760P 512G/M.2 PCIe 2280/讀:3230M/寫:1625M/TLC 顆粒/五年	4588
Video	影馳 GALAX GTX1060 EXOC White 3GB(1733MHz/24cm)	6490
Monitor	華碩 VZ229H(1A1H/8 千萬/5ms/IPS/含喇叭)	3280
Monitor	華碩 VZ229N(1A1D/8 千萬/5ms/IPS/無喇叭)	2980
Case	視博通統治者顯卡長 42/CPU 高 16/ATX	890
Power	海韻 S12II-430W/銅牌/5 年保固/CPU 主線:18AWG: 鍍銅	1450
Keyboard	Corsair K95 RGB PLATINUM 機械式電競鍵盤-銀軸	6190
Mouse	羅技 G402 高速追蹤遊戲滑鼠	1190
Network	ASUS 華碩 XG-C100C 10G 有線網路卡	2950
Sound card	(on board)	-
Total price		54748

TABLE 4.1

A typical dual screen PC constructed using approximately \$55,000NTD.

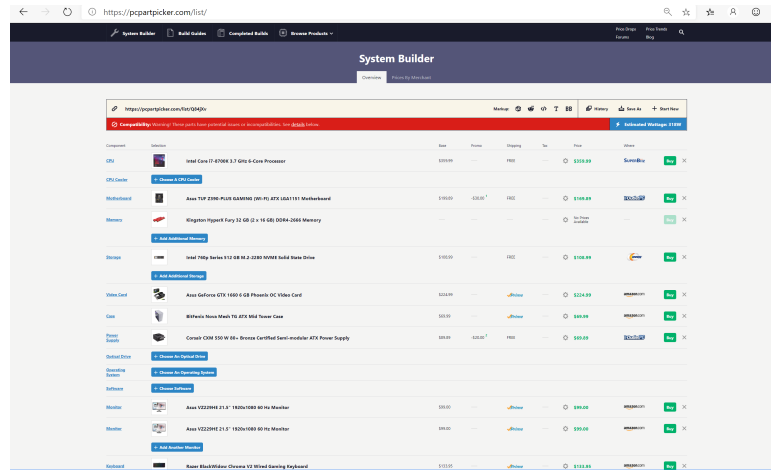
CPU: Intel Core i7-8700K 3.7 GHz 6-Core Processor (\$359.99 @ SuperBiiz)
Motherboard: Asus TUF Z390-PLUS GAMING (WI-FI) ATX LGA1151 Motherboard (\$169.89 @ OutletPC)
Memory: Kingston HyperX Fury 32 GB (2 x 16 GB) DDR4-2666 Memory
Storage: Intel 760p Series 512 GB M.2-2280 NVME Solid State Drive (\$108.99 @ Newegg)
Video Card: Asus GeForce GTX 1660 6 GB Phoenix OC Video Card (\$224.99 @ Amazon)
Case: BitFenix Nova Mesh TG ATX Mid Tower Case (\$69.99 @ Amazon)
Power Supply: Corsair CXM 550 W 80+ Bronze Certified Semi-modular ATX Power Supply (\$69.89 @ OutletPC)
Monitor: Asus VZ229HE 21.5" 1920x1080 60 Hz Monitor (\$99.00 @ Amazon)
Monitor: Asus VZ229HE 21.5" 1920x1080 60 Hz Monitor (\$99.00 @ Amazon)
Keyboard: Razer BlackWidow Chroma V2 Wired Gaming Keyboard (\$133.95 @ Amazon)
Mouse: Logitech G203 Prodigy Wired Optical Mouse (\$26.49 @ Amazon)
Total: \$1362.18
Prices include shipping, taxes, and discounts when available
Generated by PCPartPicker 2019-10-04 03:39 EDT-0400

4.3 Lab Questions

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4.3.1 Basic PC Construction

1. Given \$30000 TWD (a usual condition in schools when the school is giving you budget), please construct your PC. (Use PCPARTPICKER website which can verify compatibility)

**FIGURE 4.1**

PCPARTPICKER can also check the compatibility of your components.

2. Suppose you have acquired a motherboard containing an X570 chip. Construct a PC using \$2000USD using this motherboard.
3. Suppose you have to construct a \$90000 TWD machine capable of deep learning. You dumb boss requires you to install a Nvidia RTX 3090 graphic card. Construct a system under his request.

If you use the interface provided by PCPARTPICKER, you can download/export your result in a text file.

4.3.2 Understanding your Equipment

For your own laptop, desktop, or if you do not own these things, use the experiment PC provided by the department, please tabulate the internal components as in Table 6.1.

4.3.3 Please Explain the Following Terms

1. Dual-core, quad-core, hex-core, and oct-core.
2. DDR (Double data rate), dual channel, and quad channel.
3. PCI-e, USB, and thunderbolt.
4. SATA, Hybrid drives, and SAS (Serial Attached SCSI).
5. SAN, NAS, and DAS storages.
6. RS-232, USB, and Thunderbolt interfaces.
7. RJ-45.

8. Integrated (Onboard) VGA and discrete VGA.

4.4 Lab Report

Your lab report is due in class or no later than 1 week after the lab.