**Overview:**

Students work individually to understand and establish the specifications for a PC dedicated to a specific task or function. (The specific task or function will be assigned to the student from the list below.) The function and features of various hardware components are researched to develop a general understanding. Specific components and features are then selected based on appropriate need for the assigned task or function. The final product is a brochure that will be shared with other classmates during a tradeshow event.

**Objectives:**

* Use correct terminology to describe computer hardware, speed measurements, and size

measurements

* Describe the functions of the internal components of a computer
* Describe the functions of common computer peripheral devices
* Assess user computing needs and select appropriate hardware components for different

situations

**Getting Started:**

1. You will be required to design a “dream machine” personal computer (PC) for one of the tasks assigned to you from the list below.
2. To get started, develop a general understanding of what will be important features and what will be less important features of our dream machine. Consider the following:
   1. Operating system software
   2. Special application software
   3. Processor & motherboard speed
   4. Main memory speed and size
   5. Secondary storage speed and size
   6. Graphics and display speed and resolution
   7. External devices (e.g. keyboard, pointing devices, joysticks, etc.)
   8. Network connectivity
   9. Power and data backup
   10. Printers, scanners, and similar equipment
   11. Portability and durability
   12. Budget (cost) considerations

Specific Tasks & Functions

1. ***Game Computer***: Dedicated to playing PC games in a home environment
2. **Photo Editing & Organization**: Dedicated to editing and producing photographs and images in a home or professional environment
3. ***Business Office Computer***: Dedicated to producing documents and presentations and communicating with other people in a professional office environment
4. ***Student Home Computer***: Dedicated to completing homework, paying bills, communicating with friends and other similar tasks in a home environment
5. ***Factory Floor Computer***: Dedicated to reading documents, filling in forms, processing orders, etc. in a factory or warehouse environment.
6. ***Media Production and Streaming Computer***: Dedicated to production and distribution of video and/or music media in a semi-professional environment
7. ***Web Surfing Computer***: Dedicated to surfing the web, streaming media, and communicating through on-line services in a home environment

**Level 1: Processor & Memory**

1. Research and summarize the main features and function of a CPU processor chip. Consider the following:
   1. Physical packaging shape and size

-Square

- 3 cm

* 1. Processing speed and power

64-180 wattts

* 1. Memory speed and size

2.8 GHz to 4.6 GHz

1. Research and summarize the history of how a CPU processor chip has changed over the years. Consider the following:
   1. Typical processor speed, size, model numbers in the early 1990’s

Speed:

150 MHz

Size:   
12 × 9.6 in 305 × 244 mm

Model Number:

 Alpha EV5 21164-BA 300 MHz 21-40658-17

* 1. Typical processor speed, size, model numbers in the early 2000’s

Speed:

1.0 GHz to 3.2 GHz

Size:

130nm to 65nm

Model Number:

AMD Athlon 64 X2 5200 Brisbane Dual-Core 2.7 GHz Socket AM2 65W ADO5200DOBOX Processor

* 1. Typical processor speed, size, model numbers in the current time

Speed:

2.8 GHz

Size:

3 cm

# Model Number:

# Intel Core i5-8400 Desktop Processor 6 Cores up to 4.0 GHz LGA 1151 300 Series 65W

1. Research and summarize the main features of motherboards. Consider the following:
   1. Physical packaging shape and size

Shape: Rectangle

Size:

* 1. Speed and size

Speed:

Size:

1. Research and summarize the history of how motherboards have changed over the years. Consider the following:
   1. Typical speed, size, model numbers in the early 1990’s

Speed:

Size:

Model Number:

* 1. Typical speed, size, model numbers in the early 2000’s

Speed:

Size:

Model Number:

* 1. Typical speed, size, model numbers in the current time

Speed:

Size:

Model Number:

1. Research and summarize the main features and function of RAM memory. Consider the following:
   1. Physical packaging shape and size
   2. Speed and size
2. Research and summarize the history of how RAM memory has changed over the years. Consider the following:
   1. Typical speed, size, model numbers in the early 1990’s

Speed:

Size:

Model Number:

* 1. Typical speed, size, model numbers in the early 2000’s

Speed:

Size:

Model Number:

* 1. Typical speed, size, model numbers in the current time

Speed:

Size:

Model Number:

1. Research and summarize the main features and function of Hard Disk Drives (HDD). Consider the following:
   1. Physical packaging shape and size
   2. Speed and size
2. Research and summarize the history of how Hard Disk Drives (HDD) have changed over the years. Consider the following:
   1. Typical speed, size, model numbers in the early 1990’s

Speed:

Size:

Model Number:

* 1. Typical speed, size, model numbers in the early 2000’s

Speed:

Size:

Model Number:

* 1. Typical speed, size, model numbers in the current time

Speed:

Size:

Model Number:

1. Explain and justify the processor and memory requirements for your ‘dream machine’ task. Discuss the following:
   1. Minimum and “would be nice” requirements for the CPU chip
   2. Minimum and “would be nice” requirements for the Motherboard
   3. Minimum and “would be nice” requirements for the RAM memory
   4. Minimum and “would be nice” requirements for the HDD

**Level 2: Display & Peripherals**

t.b.d.

**Task & Function Signup**

|  |  |
| --- | --- |
| **Task** | **Student Name** |
| ***Game Computer*** | Manvir |
| **Photo Editing & Organization** |  |
| ***Business Office Computer*** |  |
| ***Student Home Computer*** |  |
| ***Factory Floor Computer*** |  |
| ***Media Production and Streaming Computer*** |  |
| ***Web Surfing Computer*** |  |
| ***Game Computer*** |  |
| **Photo Editing & Organization** |  |
| ***Business Office Computer*** |  |
| ***Student Home Computer*** |  |
| ***Factory Floor Computer*** |  |
| ***Media Production and Streaming Computer*** |  |
| ***Web Surfing Computer*** |  |
| ***Game Computer*** |  |
| **Photo Editing & Organization** |  |
| ***Business Office Computer*** |  |
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| ***Factory Floor Computer*** |  |
| ***Media Production and Streaming Computer*** |  |
| ***Web Surfing Computer*** |  |
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