PC BUILDING

PRESENTED BY
CSEC

WHAT IS A PC

General purpose Personal Computer for individual usage

Macintosh 1984

WHAT IS A PC

General purpose Personal Computer for individual usage

IBM Personal Computer XT 1988

WHAT IS A PC

General purpose Personal Computer for individual usage

Dell OptiPlex Education 2003 - Present

WHAT IS A PC

General purpose Personal Computer for individual usage

Some Alienware Garbage

THE MAIN COMPONENTS

- Central Processing Unit (CPU)
- Graphics Processing Unit (GPU)
- Motherboard
- Random Access Memory (RAM)
- Storage (HDD/SSD/SSHD)
- Power Supply Unit (PSU)
- PC Case

WHAT ARE WE BUILDING TODAY?

Component	Part We're Using
CPU	Intel Core i5-6400 2.7Ghz Quad-Core Processor
GPU	GIGABYTE Radeon RX-470 G1 Gaming 4GB
Motherboard	ASUS B150M-A/M 1151 Socket Intel B150 Chipset
RAM	G. Skill Ripjaws 4 8GB (2x4GB) DDR4 2133MHz
Storage	ADATA SX930 120GB Solid State Drive
Power Supply	Corsair CX500 500 Watt 80PLUS Bronze Cert. PSU
PC Case	Corsair Carbide Series 200R USB3 ATX Mid Tower

IS THAT GOOD? WHAT DOES IT MEAN?

CENTRAL PROCESSING UNIT

- Electronic circuitry “Brain” within a computer
- Carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output
- Has ‘clock speed’ – the processing speed, more or less
- Has ability to be overclocked - turbo charged
- Threads and Multithreading

THE GREAT DEBATE

THE GREAT DEBATE

Intel	AMD
No overclocking on mid-tier CPUs	Offers overclocking on mid-tier CPUs
Less cores than AMD	More cores than Intel
Integrated Graphics are not very good	Most APUs deliver passable gaming performance
Better single core performance	Better multi core performance
Better power consumption	Worse power consumption
Better cost-per-dollar	Worst cost-per-dollar except for low-end builds
Better CPU-intensive performance	Worse CPU-intensive performance

WHAT DID WE BUY?

Intel Core i5-6400k 2.6GHz Quad-Core Processor

Microarchitecture: **Intel Skylake**

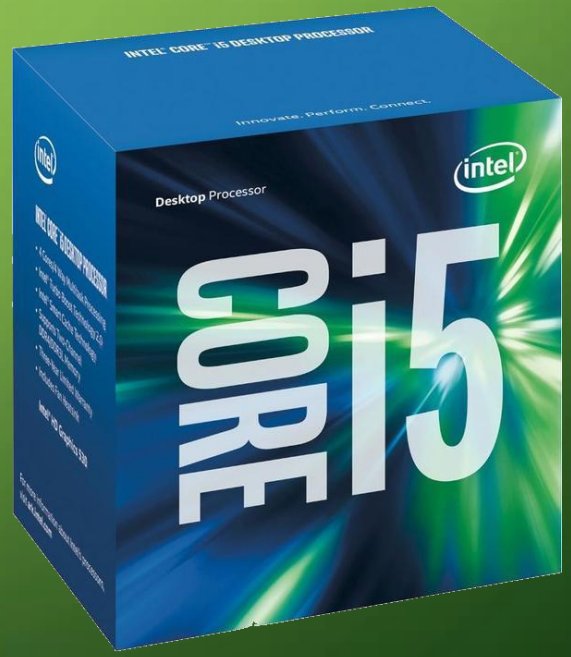
Series: **Core-i5**

Clock Rate: **2.6Ghz**

Cores: **4**

Overclockable: **No**

Socket Type: **LGA1151**



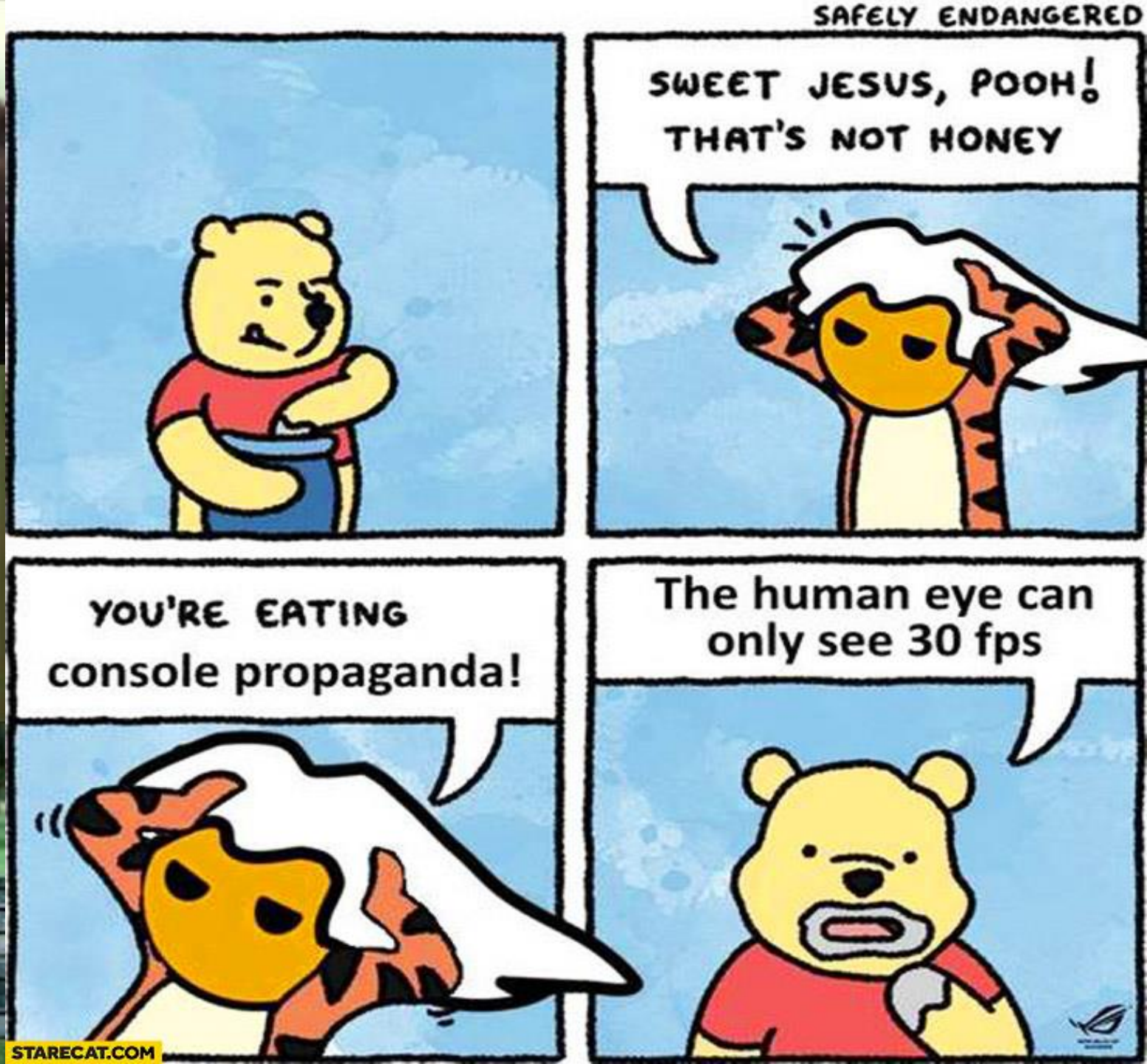
GRAPHICS PROCESSING UNIT

- Specialized processing unit for creation of images and display
- Originally was integrated with the CPU
  - Still have integrated graphics! Intel Integrated Graphics and Accelerated Processing Units
- Does calculations for 3D computer graphics, texture mapping, rendering
- Uses own RAM – called VRAM, or Video RAM
- Optimization for DX11, DX12, and other graphics technology

WHAT GPU HAVE YOU GOT?

INTEL HD GRAPHICS

imgflip.com


SAFELY ENDANGERED
SWEET JESUS, POOH! THAT'S NOT HONEY
YOU'RE EATING console propaganda!
The human eye can only see 30 fps
STARECAT.COM

THE [OTHER] GREAT DEBATE

THE [OTHER] GREAT DEBATE

- Direct X11/Direct X12 Support
- G-Sync vs Freesync Support
- NVIDIA Shadowplay vs AMD GVR
- Streaming Capabilities
- RAM and Reliance
- HAIR HAIR HAIR (Hairworks vs TressFX)

NVIDIA
GAMEWORKS
OFF
ON

WHAT DID WE BUY?

GIGABYTE Radeon RX-470 G1 Gaming 4GB

Redistributor: **GIGABYTE**

Series: **AMD Radeon RX-470**

VRAM: **4GB**

Benchmark Score: **7239**

THE MOTHERBOARD

- Main printed circuit board (PCB) for communication
- Connectors for Peripheral Component Interconnect Express (PCIe)
- Size differences (MicroATX, MiniATX, and ATX)
- Chipset support for different microarchitecture of CPUs
- Serial ATA (SATA) bus interfaces for storage devices

Dual Channel RAM

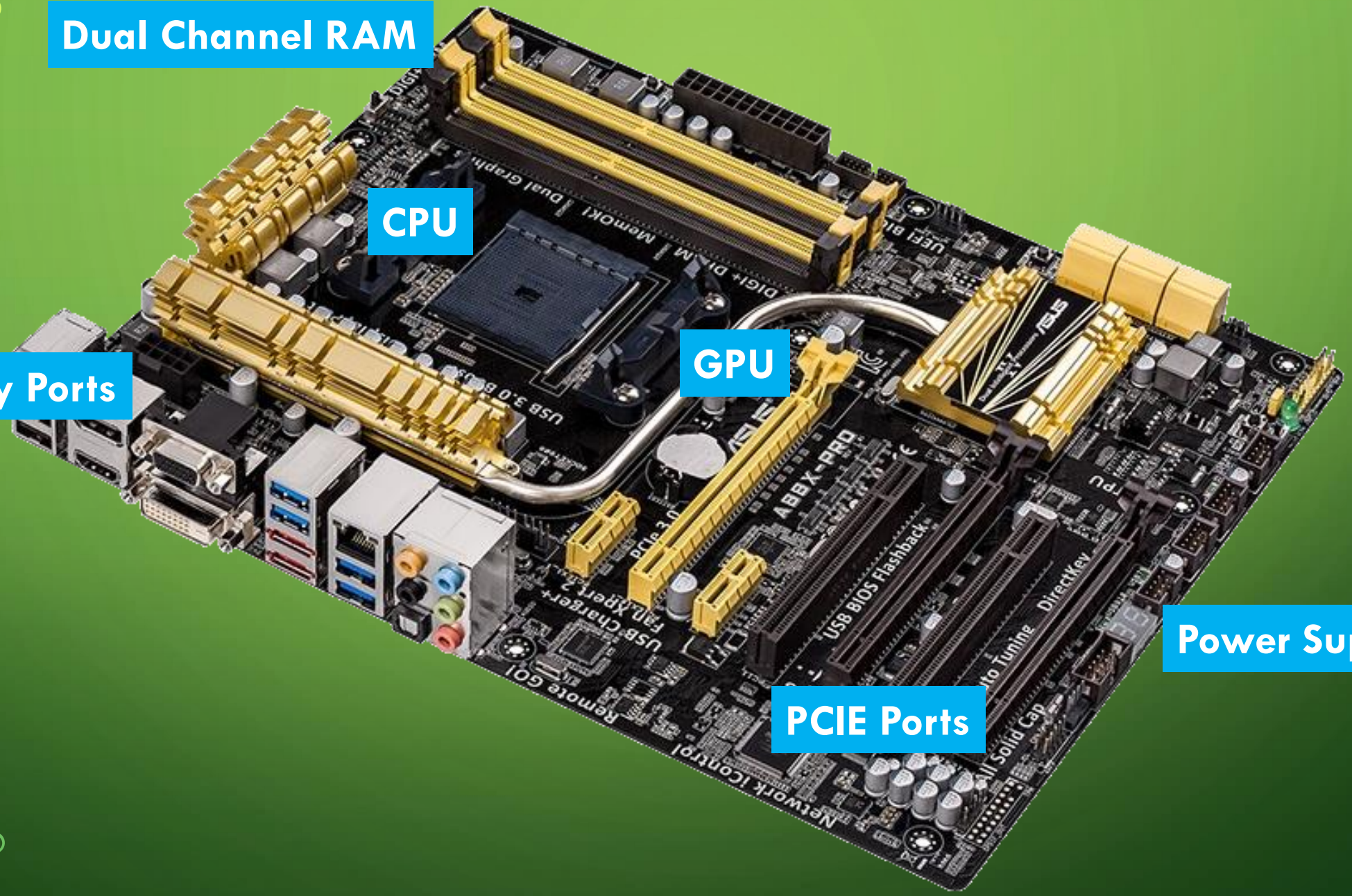
CPU

GPU

Utility Ports

Power Supply Ports

PCIE Ports



WHAT DID WE BUY?

- ASUS B150M-A/M 1151 Socket Intel B150 Chipset

Manufacturer: **ASUS**

Architecture: **ATX B150 for LGA-1151 Chipset**

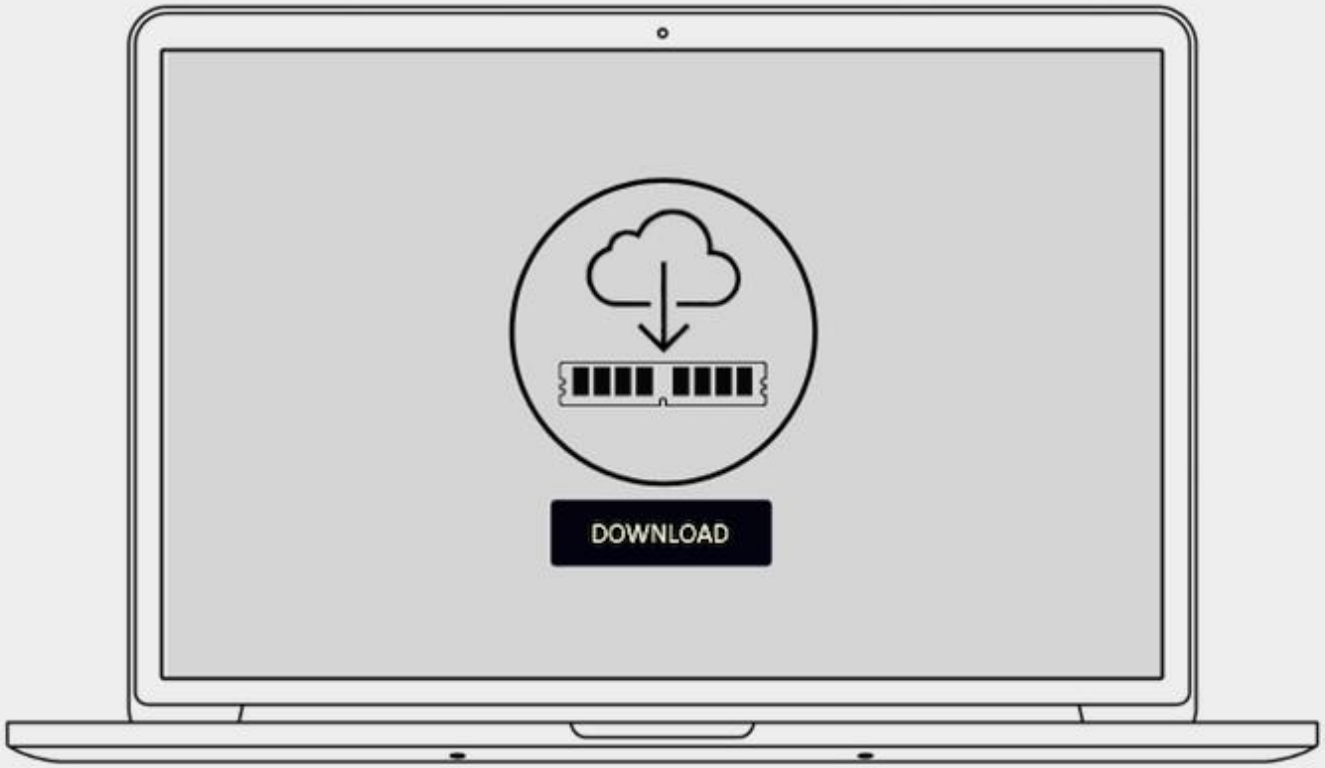
RAM: **Dual Channel DDR4-2133 Support**

PCIe Slots: **2 x PCIe 3.0 x16 slots**

SATA Ports: **6 x SATA 6Gb/s**

Download More RAM!

Instant Fast FREE



RANDOM ACCESS MEMORY

- Fast access of data and items regardless of physical location
- Example is a lot of books on a table vs a categorized library
- RAM is volatile memory, requires power to keep data accessible
- RAM Speed is measured in MHz: Often 1600Mhz, 2100Mhz, etc.
- CAS Latency: How long RAM responds when CPU makes a request
- DDR4 Ram: Double Data Rate 4th-Gen Synchronous Dynamic RAM

WHAT DID WE BUY?

G. Skill Ripjaws 4 8GB (2x4GB) DDR4 2133MHz

Redistributor: **G. Skill**

RAM: **2 Sticks of 4GB each (8GB)**

CAS Latency: 15

Type: DDR4 Ram 2133MH

STORAGE

Hard Disk Drive (HDD)	Solid State Drive (SSD)	Hybrid Drive (SSHD)
Lots of storage space	Not a lot of storage space	Lots of storage space
Very cheap storage	Expensive storage	Somewhat cheap storage
Slow read/write time	Extremely fast read/write time	Medium slow read/write time
More energy consumption	Less energy consumption	More energy consumption
Magnet and Vibration sensitive	Safe against both	Magnet and Vibration sensitive

WHAT DID WE BUY?

ADATA SX930 120GB Solid State Drive

Redistributor: **ADATA**

Storage Type: **Solid State Drive**

Capacity: **120 GB**

Speed: **6 GB/s write and read rate**

Size: **2.5”**

POWER SUPPLY UNIT

- Supplies power to most components of the PC
- Non-modular, semi-modular, and fully modular PSUs exist
- **VERY VERY IMPORTANT. DO NOT CHEAP OUT ON THIS**
- Divided into efficiency tiers, **None, Bronze, Silver, Gold, and Platinum**

Ecos 80PLUS Program – Efficiency Chart					
Load	80 PLUS	80 PLUS BRONZE	80 PLUS SILVER	80 PLUS GOLD	80 PLUS PLATINUM
20%	80%	82%	85%	87%	90%
50%	80%	85%	88%	90%	92%
100%	80%	82%	85%	87%	89%

WHAT DID WE BUY?

Corsair CX500 500 Watt 80PLUS Bronze Cert. PSU

Manufacturer: **Corsair**

Series: **CX Builder Series**

Power: **500 Watt**

Efficiency Rating: **ECO 80PLUS Bronze**

Modularity: **Non-modular**

PC CASING

- Various sizes (Smaller towers, ATX Mid Tower, ATX Full Tower)
- Inclusion of in-built power supply
- 5.25”, 2.5”, 3.5” bays for SSD, HDD, and other things
- Standoff placement / holes for motherboard
- Ventilation and dust mangement
- Wire management and organization

THEY LOOK SICK

WHAT DID WE BUY?

- Yuck.

WHAT DID WE BUY?

Corsair Carbide Series 200R USB3 ATX Mid Tower

Manufacturer: **Corsair**

Series: **Carbide 200R**

Size: **ATX Mid-Tower**

In-built PSU: **None**

Bays: **3x5.25”, 4x2.5”, 4x3.5”**

BY THEIR POWERS COMBINED

PC CASE

CPU

GPU

Motherboard

RAM

SSD Storage

PSU

Take a Break

while we set up

HELPFUL RESOURCES

PCPARTPICKER

www.pcpartpicker.com	Build creation and compatibility site
www.reddit.com/r/buildapc	Common questions, build review, etc.
www.reddit.com/r/buildapcsales	General PC and peripheral sales
www.reddit.com/r/bapcsalescanada	Same as above, but only Canada
www.reddit.com/r/hardwareswap	Trade hardware or buy for cheap
www.tomshardware.com	Helpful guides, reviews, and forums