MOTHERBOARDS

ASSIGNMENT 2

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W0441213

Motherboard: MSI Z170A GAMING PRO

a) Chipset:

* Intel Z170 Express

Important features/benefits of the Intel Z170 Express chipset:[[1]](#footnote-1)

* It fully supports CPU overclocking.
* It can split up PCIe 3.0 lanes in either two or three ways. This allows the usage of multiple video cards or it allows more PCIe devices to directly connect with the CPU.
* It supports Smart Sound Technology and Smart Response Technology.
* Using Rapid Storage Technology, it can support RAID 0,1,5, and 10 (SATA) and RAID 0 and 1 (M.2 PCIe).
* It has improved performance because it utilizes serial point-to-point links which allow increased stability and bandwidth.
* It has 6 USB 3.1 ports and 6 USB 2.0 ports.

b) CPU Socket Type:[[2]](#footnote-2)

* LGA1151

Fastest CPU compatible:

* Intel i7-7700k
* Price: $478.98 (plus taxes)
* URL: <https://www.amazon.ca/Intel-i7-7700K-Desktop-Processor-BX80677I77700K/dp/B01MXSI216/ref=asc_df_B01MXSI216/?tag=googleshopc0c-20&linkCode=df0&hvadid=292953537767&hvpos=1o1&hvnetw=g&hvrand=3930222696094167085&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=&hvtargid=pla-381707158477&psc=1>

Key features of Intel i7-7700k:

* Smart Cache: 8MB
  + This feature will allow faster access to data because it enables dynamic efficient allocation.
* Intel Turbo Boost 2.0
  + This feature will allow the processor to achieve 4.5GHz
* Intel Identity Protection
  + This feature is a built-in security technology. It helps by providing a method for protecting access to data from threats and fraud. The method it uses is simple and is tamper resistant.
* Intel Hyper-Threading Technology
  + This feature delivers two processing threads per core which means that it can get more work done and it can complete tasks sooner.
* Intel Optane Memory
  + This feature has a non-volatile memory that is addressable and can be used as storage. It accelerates responsiveness, as well as, system performance.

c) Memory Slots:[[3]](#footnote-3)

* 4 x DDR4 memory slots, up to 64GB

To add 16gb of the fastest memory supported:

* G.Skill Flare X Series 16 GB (2 x 8 GB) DDR4-3200 Memory
* Price: $160.99 (plus shipping and taxes)
* URL: <https://www.newegg.ca/g-skill-16gb-288-pin-ddr4-sdram/p/N82E16820232519>
* Speed: DDR4-3200
* Type: 288-pin DIMM
* CAS Latency: 14
* Voltage: 1.35V
* Non ECC, Unbuffered.

d) Expansion Bus slots:[[4]](#footnote-4)

* 3 x PCIe 3.0 x16 slots
* 3 x PCIe 3.0 x1 slots
* 1 x PCI slot

Does motherboard have onboard video?

* Yes, the motherboard has an onboard video.

Does it support SLI or CrossFire?

* It supports 3-way CrossFire Technology and 2-way SLI Technology.

Best video card added for $300 compatible with the system:

* XFX Radeon RX 580 8 GB GTS XXX ED Video Card
* Price: $268.40
* URL: <https://www.vuugo.com/xfx-video-cards-RX-580P8DFD6.html?tracking=5108053939762>

e) Hard drive interfaces:[[5]](#footnote-5)

* 6 x SATA 6Gb/s connectors (2 ports reserved for SATA Express port) and 1 x SATAe connector

Types of RAID:

* RAID 0, RAID1, RAID 5 and RAID 10

Faster compatible SSD 250gb hard drive under $200:

* Samsung 860 Evo 1 TB 2.5" Solid State Drive
* Price: $175.25
* URL: <https://www.shoprbc.com/ca/shop/product_details.php?pid=37089914>

f) Form Factor:[[6]](#footnote-6)

* ATX

Case under $200:

* Fractal Design Meshify C Fark TG Mid-Tower Case NO PSU
* Price: $132 (plus tax and shipping)
* URL: <https://www.shoprbc.com/ca/shop/product_details.php?pid=30155922>

g) Electrical power (watts):[[7]](#footnote-7)

* 370 Watts

Power supply under $200:

* EVGA SuperNOVA G3 750 W 80+ Gold Certified Fully Modular ATX Power Supply
* Price: $178.99 (plus tax and shipping
* URL: <https://www.pc-canada.com/item/220-G3-0750-X1.html?utm_source=pcpartpicker&utm_medium=affiliate&utm_campaign=pcpartpicker>

h) Fastest external port:[[8]](#footnote-8)

* USB 3.1

Best hard drive under $200:

* WD My Passport SSD 512GB USB 3.1 External Solid State Drive
* Price: $129.99 (plus tax and shipping)
* URL: <https://www.bestbuy.ca/en-ca/product/wd-my-passport-ssd-512gb-usb-3-1-external-solid-state-drive-wdbkvx5120psl-wesn/13014149>

i) Fastest internal 802.11ac wireless card:

* Asus PCE-AC68 PCIe x1 802.11a/b/g/n/ac Wi-Fi Adapter
* Price: $109.99 (plus tax and shipping)
* URL: <https://www.newegg.ca/asus-pce-ac68-pci-express/p/N82E16833320173?Item=N82E16833320173&nm_mc=AFC-RAN-CAN&cm_mmc=AFC-RAN-CAN&utm_medium=affiliates&utm_source=afc-PCPartPicker&AFFID=2558510&AFFNAME=PCPartPicker&ACRID=1&ASID=https%3a%2f%2fca.pcpartpicker.com%2fproduct%2f8VMFf7%2fasus-wireless-network-card-pceac68&ranMID=44589&ranEAID=2558510&ranSiteID=8BacdVP0GFs-l2iuTGd_w3vVapfnQKCnCw>

j) Motherboard:[[9]](#footnote-9)

* Asus Z170-A ATX LGA1151 Motherboard
* Price: $670.75
* URL: <https://www.newegg.ca/p/N82E16813132566?Description=Asus%20Z170-A%20ATX%20LGA1151%20Motherboard&cm_re=Asus_Z170-A_ATX_LGA1151_Motherboard-_-9SIAFYT7JW7363-_-Product>
* Recommendations:
  + I recommend the Asus Z170-A ATX LGA1151 Motherboard. This motherboard is compatible would all the components that were previously chosen. Based on some reviews online as well, this motherboard can possibly even be better than the original motherboard (MSI Z170A GAMING PRO). Some advantages to the Asus motherboard would be that this motherboard has one more fan header than the MSI one (6 for Asus and 5 for MSI). This motherboard also has 0.9 more audio channels which means that it can provide better sound quality. This motherboard also has a VGA connecter and a DisplayPort output. The Asus motherboard can also allow faster data rates when one is transferring files to an external hard drive, and this is because of the USB turbo mode that it supports. I would also recommend getting a cooler for this as the CPU that was chosen (Intel Core i7-7700k) does not include a stock CPU cooler. I would recommend the NZXT Kraken X61 106.1 CFM Liquid CPU Cooler for this one.

Specific features needed:[[10]](#footnote-10)

* Form Factor: ATX
* CPU Socket Type: LG1151
* Internal Expansion Slots: 3 x PCIe 3.0 x16 slots, 3 x PCIe 3.0 x1 slots, 1 x PCI slot
* Type of Memory: 4 x DDR4 memory slots, up to 64GB
* Hard drive interface: 6 x SATA 6Gb/s connectors (2 ports reserved for SATA Express port) and 1 x SATAe connector
* External Ports: 6 x USB 3.1 Gen1 and 6 x USB 2.0

# References

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Versus. (n.d.). *Asus Z170-A vs MSI Z170A Gaming Pro*. Retrieved October 14, 2019, from Versus: https://versus.com/en/asus-z170-a-vs-msi-z170a-gaming-pro-carbon?filter[]=brands%3DMSI

1. Answers referenced from: (Bach, 2015) and (MSI, n.d.) [↑](#footnote-ref-1)
2. Answers referenced from: (Intel, n.d.) and (Cutress, 2017) [↑](#footnote-ref-2)
3. Answers referenced from: (PCPartPicker, n.d.) [↑](#footnote-ref-3)
4. Answers referenced from: (MSI, n.d.) [↑](#footnote-ref-4)
5. Answers referenced from: (MSI, n.d.) [↑](#footnote-ref-5)
6. Answers referenced from: (MSI, n.d.) [↑](#footnote-ref-6)
7. Answers referenced from: (MSI, n.d.) [↑](#footnote-ref-7)
8. Answers referenced from: (MSI, n.d.) [↑](#footnote-ref-8)
9. Answers referenced from: (Versus, n.d.) [↑](#footnote-ref-9)
10. Answers referenced from: (MSI, n.d.) [↑](#footnote-ref-10)