**Day 1 – Focus on Topic A (Understanding Computers)**

Multiple Choice Topics:

Binary Numbers, ASCII Conversion, OS Details, WWW Details

Sample Question #1

You will be given a scenario (e.g. intelligent cash register, television integrated with Netflix ) and will be asked to recommend a software (and hardware) solution using the following guidelines:

1. Type of user interface (e.g. GUI, command line, remote controller, etc.)

For an intelligent cash register you would want a touchscreen GUI so that cashiers could use it easily

1. Requirement for permanent storage (e.g. HDD, flash drive) and I/O Device management

A small HDD could be used for this intelligent cash register in order to store purchase information for tax and legal reasons

1. Processor size / speed and RAM memory requirements

The cash register would probably need a very small amount of RAM, at most about 4 gigs of RAM. It does not need a very good CPU but it needs something reliable so you could use an intel Pentium

1. Does the operating system need to provide multi-user, multi-process, or real time-control

The operating system does not require multi-user or multi-process control since it only has one purpose and can be used by anyone. It needs real time control to keep processing and storing of transactions quick.

1. What application software would need to be supported

Basic storage, calculation and QR code scanning software would need to be on the OS as well as software to access transaction details for tax purposes

1. What security would need to be provided

Security from physically inserted devices would be needed as it wouldn’t neccisaryily need internet connectivity.

1. What network interfaces would need to be provided

No network interfaces would need to be used if internet was not needed. If it was WIFI would be useful since transactions can be sent in batches and don’t need to be sent in real time and running cable is a hassle

1. What operating system would you recommend based on the above choices (e.g. Windows, Mac, Linux, z/OS, QNX, etc.) Justify your answer.

I would probably recommend Android operating system on this cash register as it would be touchscreen and it would need custom developed apps which you could get develop for it easily.

Sample Question #2

You will be given a scenario (e.g. convenience store) and will be asked to design a LAN for this scenario that addresses the following issues:

1. What devices will be connected to the LAN

Security cameras, Computers, possibly smart cash registers and any TVs used for ads and marketing

1. What network applications will these devices need to use

Security cameras would need to stream information to a computer. A smart cash register may need to send information to a computer. The computer would need apps to access these files.

1. How will these devices be connected to the LAN (e.g. Ethernet, Wifi, etc.) Justify your choices.

Security cameras should use wifi to not have their cables cut, The computers could use Ethernet since it is often cheaper than a wifi adapter. An online smart cash register would need wifi for reasons stated in question one.

1. How will you LAN be connected to the Internet (what technology e.g. Fibe) and recommend a ISP (e.g. Bell). Justify your choice

The LAN could be connected by DSL since that’s cheap and there isn’t much speed needing

1. Draw a labeled diagram of your LAN.

**Day 2 – Focus on Topic C (Computers & Society)**

Multiple Choice Topics:

File Access, Environmental Concerns, Security Concerns, AI Eliza & Turing

Sample Question #1

You will be answered to answer the question “Will AI Take My Job” by using specific supporting facts from the case studies discussed in class.

1. identify a specific job

The job of a bank teller

1. Discuss how AI could improve the job for human workers

AI could entertain the workers and take care of more menial tasks

1. Discuss how AI could reduce the need for human workers

AI could take care of some of the transactions between customers and tellers

1. Explain how AI impacts this job at the current time and how it might change the job in the future

AI does not really affect this job currently other than the AI pepper which does not currently replace any human workers

1. Make sure to provide specific examples from the case studies

Sample Question #2

You will be asked to discuss a specific malware attack covered in class by explaining the following:

1. Summarize the attack (e.g. where, when)

Stuxnet was a Trojan virus that was inserted into a computer in an Iranian nuclear facility in order to destroy their centrifuges.

1. Identify the type of malware (e.g. Worm, Trojan, etc.)

Stuxnet was a trojan

1. Explain how the attack spread and infected the computers

The attack spread over the network of the nuclear facility by infected computers sending data to uninfected computers

1. Explain how the attack impacted users and organizations

The attack destroyed many centrifuges in the Iranian nuclear program

1. Explain how the attack was controlled and how the malware was removed from computers

The attack was not controlled and it continued to spread.

**Day 3 – Focus on Topic B (Programming)**

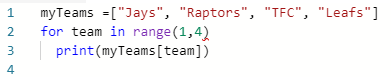
Multiple Choice Topics:

No Multiple Choice Questions

Sample Question #1

The following is a listing of a Python program that contains some errors that you need to fix.

1. Find the errors and list the line numbers where they occur.
2. For each error, explain your correction (code fix)
3. Explain the function of the program by referring to how the input variables affect the output.



Sample Question #2

You will be asked to write a Python Turtle program that includes:

1. Reading user input
2. Drawing a complex shape using different pen colors
3. Use of one or more loops to repeat shapes
4. Use of one or more if statements to check user input