Use internet resources to find the answers to the following questions. Search (google) using appropriate keywords to find the resources.

**Part 1: Computer Languages**

1. Explain the purpose and main features of “Machine Code”.
2. Explain the purpose of Hexadecimal number representation and how it is related to binary and decimal numbers.
3. How would the binary number “1011” be represented in Hex?
4. Explain the purpose and main features of “Assembly Code”.
5. How is “Assembly Code” related to machine “Machine Code”?
6. Explain the concept of “portability”.
7. Explain the main features of “Procedure Based Languages”.
8. Explain how “Object Oriented Languages” compare to “Procedure Based Languages”?
9. What are some advantages of “Object Oriented Languages”?
10. What are some disadvantages of “Object Oriented Languages”?
11. How are “High Level Languages” related to “Assembly Code” and “Machine Code”.
12. Explain the steps required to convert a high level program into a program that can be directly executed on a computer processor.

Use internet resources to find the answers to the following questions. Search (google) using appropriate keywords to find the resources.

**Part 2: Operating Systems**

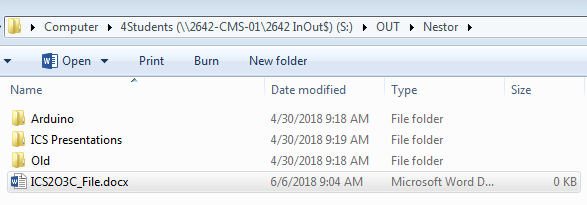
1. What is the definition of a “Computer Operating System”?
2. A Graphical User Interface is part of an operating system. List the main features of a GUI and how they are related to the interface functions of an operating system.
3. “Device drivers” are part of an operating system. List some common device drivers and how they are related to the Device Management functions of an operating system.
4. A “task scheduler” is part of an operating system. Explain the functions of a task scheduler.
5. “File Management” is part of an operating system. Explain the functions of a file management system.
6. “Security” is part of an operating system. Explain operating system security in terms of user accounts, file sharing and read and write access to user files.
7. “Memory Management” is part of an operating system. Explain the functions of a memory management system.
8. “System Utilities” are part of an operating system. Explain operating system utilities in terms of installing and uninstalling programs, backing up files and programs, checking and cleaning up disk drives, etc.
9. List the main features of an operating system, including some functions not mentioned above.
10. How is an operating system different from an application program?
11. List some different types of operating systems that you or your friends have used or may use in the near future.

Does your smart phone have an operating system? Explain with specific examples from above.  
  
Use internet resources to find the answers to the following questions.

A suggested resource is: <https://www.computerhope.com/jargon/f/filesyst.htm>

**Part 3: File Systems**

1. List five main features or functions of a file management system.
2. Explain the structure and components of a file system “hierarchy”.
3. Explain the meaning of a “Root Drive”.
4. Explain the meaning of a “Parent Directory”.
5. Explain the meaning of a “Current Directory”.
6. Explain the meaning of a “Sub Directory”.
7. Label each item / component in the following file hierarchy:



1. List five common “file extensions” and the associated application programs used in a Microsoft based computer.
2. Modern Microsoft based computers use the NTFS file system. In what ways is NTFS an improvement over the older FAT file system.
3. What file system do Apple computers use?

Use internet resources to find the answers to the following questions.

A suggested resources are:

* <https://www.techrepublic.com/blog/it-security/understand-basic-unix-file-permissions/>
* <https://technet.microsoft.com/en-us/library/2005.11.howitworksntfs.aspx>

**Part 4: Security**

1. The Unix operating system is used on many professional grade computer systems (and is the basis for Apple computers). Define and explain each of the following privilege levels:
   1. Owner
   2. Group
   3. World
2. For the Unix operating system, define and explain each of the following access permissions:
   1. Read
   2. Write
   3. Execute

1. For a presentation file you did for homework, explain why you would set the permissions to Owner: Read and Write, Group: Read Only.
2. Permissions can also be set when sharing directories. What permissions would you set for a directory that you own that contains both documents and programs. You want to share this directory so that people in your group can look at the files but other people in the class can only execute your programs.

1. Current Microsoft computers use the NTFS file system. Compare the NTFS access permissions to those used in the Unix system.

1. For a Microsoft computer, compare the NTFS privilege levels to those used in the Unix system.

1. What are some strengths and weaknesses of NTFS security compared to Unix security?