

**College of Engineering & Technology**

**Department of Computer Science**

**Comp 431 HW 1 Spring 19/20 Due :midnight 29/03/2020**

**[1]** What are the two types of data structures introduced in **spooling**.

Draw the diagram explaining your answer.

**[2]** **(i)** Define **Cache** memory.

**(ii**) Give 3 examples of cache in the system

**[3] Draw** diagram explaining the following:

1. Process Major States
2. Interrupt vector

**[4]** Briefly, explain the difference between:

1. **monitor** and **user** mode.
2. **multiprogramming** and **timesharing**.
3. **Buffering** and **spooling.**
4. **System call** and **system program**.

**[4] (a)** What is the **major advantage**?

1. **DMA**
2. **Threads**
3. **One-to-one** relationship between user **threads** and **kernel threads**

**[5]** What is the meaning of:

- **CPU utilization**

- **Memory utilization**

**- HD utilization**

**[6]** **(a)** What is an **interrupt** ?

**(b**) Define a **Trap**. Give an example.

**(c**) What type of interrupt the following piece of code might generate. **Explain.**

int n=1;

while (n=0)

printf(“Hello”);

**(d)** A slow input device can transmit 10 characters every one sec, the CPU can handle the input device

interrupt in 1 milS. Compute the percentage of the CPU time left for Asynchronous I/O.

**[7]** What is the **major advantage** of:

1. **DMA**
2. **Threads**
3. **Many to many** relationship between **user** **threads** and **kernel threads**.
4. **Producer-Consumer** processes
5. **Cash memory.**

**[8]** **(a)** There are 3 views and 3 goals of the OS, list them matching each two.

**(b)** Define the two types of I-O.

**[9] (a)** Define **I-O bound** and **CPU bound** job.

**(b)** How this can affect Job (long-Term) scheduling**.**

**[10]** **Define** :

1. degree of multiprogramming:
2. throughput:
3. Microprogram :
4. waiting time:
5. dispatcher:
6. Command interpreter:

**Notes:**

* 1. Solve the questions and write it with your own handwriting.
  2. Submit a **pdf** copy of your solution.
  3. Reply to the message **431-HW1** only, no home works will be accepted by other means.
  4. No home work will be accepted after the deadline.
  5. Work individually.
  6. Only a subset of random questions will be graded.