| **Homework Assignment 02** | **Assigned:** | Tue 27 JAN 2026 |
| **Memory** | **Due:** | Sun 08 FEB 2026 |

Instructions:

- The assignment is to be uploaded to Canvas by the due date, which is scheduled for 11:59pm ET that day since solutions will be distributed soon after.
- We expect that you will study with friends and often work out problem solutions together, but *you must write up your own solutions, in your own words*. **Cheating will not be tolerated.** Professors and TAs will be available to answer questions but will not do your homework for you. One of our course goals is to teach you how to think on your own and solve your own problems using your resources. Cut and paste from Google or ChatGPT will be considered plagiarism.
- We require that all homework submissions be neat and organized. You may either type your solutions in a word processor and print to an Adobe PDF or write them by hand and submit a legible scanned copy in Adobe PDF. Do write and submit your answers as if they were a professional report. **There will be point deductions if the submission is not neat** (is disordered, difficult to read, scanned upside down, etc.).
- To achieve full credit, **show INTERMEDIATE steps, if applicable,** leading to your answers throughout.

Problem 1 [60 points]: Memory Allocation

Given six memory partitions of 300KB, 600KB, 350KB, 200KB, 750KB, and 125KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of size 115KB, 500KB, 358KB, 200KB, and 375KB (in order)? Rank the algorithms in terms of how efficiently they use memory.

Problem 2 [40 points]: Scheduling

Earliest Deadline First (EDF) is an optimal dynamic priority scheduling algorithm used in real-time systems. It can be used for both static and dynamic real-time scheduling. EDF uses priorities to the jobs for scheduling. It assigns priorities to the task according to the absolute deadline. The task whose deadline is closest gets the highest priority. The priorities are assigned and changed in a dynamic fashion.

Consider two processes, P1 and P2, where P1 = 50, t1 = 25, P2 = 75, and t2 = 30, where t is the time required for the corresponding process to complete. Illustrate the scheduling of these two processes using earliest-deadline-first (EDF) scheduling. Illustrate your solution using a Gantt chart like those used in class.