MIDWESTERN STATE UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE

CMPS 4103- Introduction to Operating Systems

Fall semester 2022

Mini Project 3 – Virtual memory - due date 11/17

Project description.

Your assignment consists of designing and implementing a program that will analyze the use of a segmentation and paging in a virtual memory system. Your program will read the file available for download through D2L and identify the segments and virtual pages accessed in that file, reporting the total number of different segments and different pages. There are 1024 segments and the size of a page is 2048 bytes. Addresses have been recorded in the file as byte addresses with leading zeros omitted. The data file has 1 million addresses. Your program will accept several records of input data, according to the following format:

Code Address (in hexadecimal)

Where code is identified by a single digit with the following meaning
0 - address for data read
1 - address for data write
2 - address for instruction fetch
(this data value, code, does not affect the analysis and should be ignored):

An example of the data file contents could be

2 415130
0 1010acac
2 415134

The address size is 32 bits. An address such as AB means 000000AB. The program must be written in C or C++ and be the smallest possible code to solve the problem. DO NOT CODE ANY SOLUTION THAT CAN BE APPLIED TO OTHER PROBLEMS (HINT: you can read hexadecimal numbers in C++ using unsigned integers and the command FILE>>hex>>number;)

You must turn in the source code of your program and a short report. The project may be done by groups of <u>at most three students</u>.