**UNX511 Lab 2: Monitoring Process Memory Usage**

**Due: Sunday, May 25, 2025 (11:59pm)**

In this lab you will link a static library into your build and use the available functions inside it. The static library is libPidUtil.a and its header file is pidUtil.h. Take a look at the functions in **pidUtil.h** because your code will be calling these functions. You can also look inside the contents of **libPidUtil.a** using nm as follows:

*$ nm libPidUtil.a | grep ' T '*

**PART A**

Your job is to create a **Makefile** and **Lab2-yourname.cpp** which links this static library in the build process and uses some of the functions inside. **Lab2-yourname.cpp** must:

1. Call **GetAllPids()** and **GetNameByPid()** to print out all pids and their names.
2. Set pid to 1. Call **GetNameByPid()** and print out the name of pid 1.
3. Set name to "Lab2". Call **GetPidByName()** to get the pid of Lab2. Print "Lab2" and the pid of Lab2.
4. Set name to "Lab22". Call **GetPidByName()** to get the pid of Lab22. There should not be a process called Lab22, therefore this should test your error message generation system.
5. If any errors are generated in the calls to these functions, the error must be printed out by a call to the function **GetErrorMsg()** with the error number as an argument.

**PART B**

The Makefile for libPidUtil.a is as follows:

```
CC=g++
CFLAGS=-I
CFLAGS+=-Wall
CFLAGS+=-c
AR=ar
pidUtil: pidUtil.cpp
   $(CC) $(CFLAGS) pidUtil.cpp -o pidUtil.o

lib: pidUtil.o
   $(AR) rcs libPidUtil.a pidUtil.o


clean:
   rm -f *.o *.a

install:
   cp libPidUtil.a ../.
   cp pidUtil.h ../.

all: pidUtil lib
```

In a Word document, please explain every line of this Makefile.

## Assignment Submission:

- Complete all steps, Add all output-screenshot and explanations (if required) to a MS-Word file.
- Add the following declaration at the top of MSWORD file

```
/*********************************************************************
***
* UNX511-Lab2
* I declare that this lab is my own work in accordance with Seneca Academic Policy.
* No part of this assignment has been copied manually or electronically from any other source
* (including web sites) or distributed to other students.
*
* Name: _____ Student ID: _____ Date: _____
*
*
*********************************************************************
**/
```

- Please submit the Source code (zip all .c, .h, and makeFiles)

- Please answer the following two declarations:
    - D1) On a scale from 1 to 5, **How much did you use generative AI to complete this assignment?**
        - where:
        - **1** means you did not use generative AI at all
        - **2** means you used it very minimally
        - **3** means you used it moderately
        - **4** means you used it significantly
        - **5** means you relied on it almost entirely
        - **Your answer :**
    - D2) On a scale from 1 to 5, **How confident are you in your understanding of the generative AI support you utilized in this assignment, and in your ability to explain it if questioned?**
        - where:
        - **1** means "Not confident at all – I do not understand the generative AI support I used and cannot explain it."
        - **2** means "Slightly confident – I understand a little, but I have many uncertainties."
        - **3** means "Moderately confident – I understand the majority of the support, though some parts are unclear."
        - **4** means "Very confident – I understand most of the AI support well and can explain it with minor gaps."
        - **5** means "Extremely confident – I fully understand the generative AI support I used and can clearly explain or justify it if asked."
        - **Your answer :**

- Please submit the Source code (zip all .c, .h, and makeFiles)

## Important Note:

- **LATE SUBMISSIONS for labs**. There is a deduction of 10% for Late assignment submissions, and after three days it will grade of zero (0).
- This labs should be submitted along with a video-recording which contains a detailed walkthrough of solution. Without recording, the assignment can get a maximum of 1/3 of the total.
    - Note: In case you are running out of time to record the video, you can submit the assignment (source code + screenshots) by the deadline and submit the video within 24 hours after the deadline.