2803ICT – System and Distributed Computing – T2 2021
Assignment 1 – Milestone 1

Requirement:

1. Write a C code for 'shell' program so that it operates as a command shell. When you run it, it waits for you to type in the command name, then executes it and prints the results to *stdout*. It then waits for and executes the next command in an endless loop, unless the entered command is '**quit**'.

2. Your code should work on a linux environment.

3. The following 7 commands are to be supported by your shell program.
   - **calc** ***expr.*** - prints out the result of the mathematical prefix expression that comes after the command.
   - **time** - prints out the current local time and date
   - **path** - prints out the current working directory
   - **sys** - prints the name and version of the OS and CPU type
   - **put** ***dirname filename(s) [-f]*** – put files *filenames* in the directory *dirname*
   - **get** ***filename*** - prints the content of the file *filename* to the screen
   - **quit** - ends the program

Notes:

- If the command is not one of the above, you should print an error message and wait for a new command.
- You can assume the expression after the **calc** command is a valid prefix expression containing only '+' and '–' signs. You can also assume a space character separates any two numbers/signs. e.g. "+ + 2 3 - 4 5".
- Note that if you want to use the prefixadd() function from week 2 workshop you will need to store the expression as a ragged array of strings (see week 2 exercise 3).
- **time** – you can use the functions defined in **<time.h>** (link). Hint: look at **time()**, **localtime()** and **asctime()** functions.
- **path** - you can use the linux system function **getcwd()** (link).
- **put** - The **put** command will create a new directory called ***dirname*** and **copy** the file (or files) listed in the command, in this directory. If the directory exists you should only print an error message, unless **-f** has been specified, in which case the directory will be completely overwritten (old content is deleted). If a file(s) doesn't exist, you will need to print a 'file not found' message for that file.
- **get** - The **get** command will dump the file contents to the screen 40 lines at a time and pause, waiting for a key to be pressed before displaying the next 40 lines etc.

3. Write a **Unix makefile** that creates an executable program called '**shell**' for your program.