Systems Programming 1 – COMP2019

Tutorial and Lab Practice Two

This work will not be marked. You should complete it within one week.

Tutorial

1. Get any book/resource about C programming language, read the chapters regarding C data types and structures, pointers and arrays, stacks.
2. Review the terminology introduced and concepts taught in lecture 2.
3. Define an enumerated data type which contains all the week days.
4. Using the following `struct`:

```
typedef char DATA;
struct node
{
    DATA d;
    struct node *next;
};
```

   Write pseudo code for building a linked list using a loop. Your list should be built in such a way that the new item is added at the beginning of the list.

Lab Practice

1. Using the following `struct`:

```
typedef char DATA;
struct node
{
    DATA d;
    struct node *next;
};
```

   Write a program to build a single linked list using a loop. Your list should be built in such a way that the new item is added at the beginning of the list.
2. Add a function to your program to print the list.
3. Revise your program so that the generated list has the opposite order, i.e. the new item is added at the end of the list.
4. Write a function to reverse the order of the list. Print the list in its original and reversed orders.

Optional Work **(For those students who wish to practise more.)**

1. Write a program to build a double linked list using a loop. The struct should look like:

```
typedef char DATA;
struct node
{
    DATA d;
    struct node *next;
    struct node *prev;
};
```

2. Write a C program to print out the pyramid of stars. Ask users to enter the number of rows to be printed at run time. This is an example of 3 rows.

```
  *
 **
***
```