# **Assignment #1**

Problem Solving and Programming in C++
Department of Computer Science
Old Dominion University

## **Objective:**

The main objectives of this assignment are:

- train you to apply some of the struct concepts which you learned in the class
- review some of the concepts related to functions in C++

## **Problem description:**

A hospital needs an efficient way to handle Personnel information. Given the large number of Personnel, it has become very difficult to manually track information regarding current and past Personnel. This has led the hospital to hire you to program a solution.

The goal of the program is to read Hospital Personnel records from a file (hospitalPersonnel.txt – which is provided). Each line in the file is a Personnel record. Each record is best represented by a struct, so all records must be read into an array of structs.

Each line consists of the following fields separated by spaces:

#### For Medical Personnel:

FirstName LastName ID Role (MD or NP) DutyDays (3 Initials for the days in a week)

Example: Alexander Desplat 000000000 MD M W F

Example: Craig Armstrong 00000007 NP T TH F

Please note that the two abbreviations "MD" and "NP" in the role filed stand for medical doctor and nurse practitioner.

#### For Patients Personnel:

FirstName LastName ID Role ExitFlag (Y or N) AdmitDate (MM:DD:YYYY)

OptionalExitDate (MM:DD:YYYY) - If the ExitFlag is Y (Yes) this means there exists an OptionalExitDate

For example: Michael Giachino 000000008 PT Y 09:11:2013 10:11:2013

## For example: Bruno Coulais 000000001 PT N 08:04:2015

After reading the records from a file, the program should present a menu which handles the following requests:

Press 0 to print all Hospital Personnel

Press 1 to print only Patients

Press 2 to print only Doctors

Press 3 to print only Nurse Practitioners

Press 4 to print only Admitted Patients

Press 5 to print only non-Admitted Patients

Press 6 to exit:

#### Note:

- 1. Dates printed on the screen must be in the format: MM:DD:YY
- 2. Print the full day name instead of the initials. For example, if the *DutyDays* for a doctor is "M W F". Do not print "M W F," instead print "Mondays-Wednesdays-Fridays". Here is the complete list of full day names:
  - M Mondays, T Tuesdays, W Wednesdays, TH Thursdays, F Fridays, SA Saturdays, S Sunday.

The main () function of your program should be very simple. The main function should be a collection of variables declaration and functions call. You will need to use different functions to read the data from the **hospitalPersonnel.txt**, print the menu, print Hospital Personnel fulfilling a user specified criteria. This means your program must consist of at least 3 functions (excluding the main function).

## **Hints:**

- Do not use global variables; instead all information must be passed as parameters to functions.
- Some parameters may be passed by reference

- Please note that some sub-fields like Date item are best represented by struct data type. This means the struct data type representing Hospital Personnel must have a struct representing the **AdmitDate** and **ExitDate** inside it (a struct inside a struct)
- Your program should read the required data from file: hospitalPersonnel.txt

#### **Submission notes:**

- Submit all files from your project(s), especially the .cpp, .h, and .cbp file(s)
- Zip the .cpp and name it as "Assg1\_cslogin", where the cslogin is your login ID for the computers at the Department of Computer Science at ODU.
- Submit the zipped file to the respective Blackboard link.

## **Sample output: No selection (initial screen)**

```
Success opening hospitalPersonnel.txt
totalHospitalPersonnels: 10
Alexandre Desplat
                    000000000
                                 MD
                                          Mondays-Wednesdays-Fridays
                    0000000006
000000007
                                          Tuesdays-Thursdays-Fridays
Y 06:11:2014 06:15:2014
           Portman
                                 MD
  Rache 1
  Craig
           Armstrong
           Giachino
                    0000000008
                                                 09:11:2013
                                                              10:11:2013
  Michael
           Tiersen
Mansell
Morricone
Coulais
                    000000003
                                          Mondays-Wednesdays-Fridays
                                                Wednesdays 11
Saturdays—Sundays
9:13:2012
09:13:2012
   dann.
                    0000000004
                                          Fridays-
  Clint
   Ennio
   Bruno
                    ааааааааа
  Danny
           Elf man
                    ииииииииии
           Zimmer
                    ФИРИРИРИЯ
  Hans
Press 0 to
         print all Hospital Personnel
       to
         print only Patients
                  Doctors
Nurse Practitioners
ress
      to
         print only
         print only
      to
         print only Admitted Patients
      to
ress
         print only
                   non-Admitted Patients
      to
      to exit:
```

#### Sample output: item 1 section

```
06:11:2014
09:11:2013
09:11:2012
08:04:2015
02:03:2015
             Armstrong 000000007
Giachino 000000008
                                                                        06:15:2014
10:11:2013
09:13:2012
                                      PT
PT
PT
PT
PT
   Craig
                                                XXXXX
                      0000000008
0000000009
  Michael
             Morricone
Coulais
   Ennio
   Bruno
                       0000000001
             Elfman
Zimmer
   Danny
                       0000000002
  Hans
                       0000000005
                                                        11:09:2015
Press 0 to print all Hospital Personnel
Press 1 to print only Patients
Press 2 to print only Doctors
Press 3 to print only Nurse Practitioners
Press 4 to print only Admitted Patients
Press 5 to print only non-Admitted Patients
Press 6 to exit:
```

## Sample output: item 2 section

## Sample output: item 4 section