



Rajarata University of Sri Lanka

Faculty of Applied Sciences - Department of Physical Sciences

B.Sc. (General) Degree DATA STRUCTURES & ALGORITHMS (COM 1303) Assignment

Best Care Medicals (BCM) is one of the well known private hospitals in the city. As a computer programmer of this organization you are asked to develop a computer program to maintain the OPD procedures as mentioned below.

The proposed software basically consists of seven operations and these operations are displayed in the main console window as shown in the following figure 1.

10 OPD seats are available.	
Registration	[1]
Process	[2]
Display	[3]
Search	[4]
Order	[5]
Exit	[6]
Enter your choice: _	

Figure 1 – Main Console Window

The proposed software performs its operation based on the choice entered by the operator. Following section briefly describes the function of above mentioned operations.

Registration

BCM OPD can reserve maximum ten seats for the OPD patients. The number of available seats is displayed in the main console window as shown above.

Each patient has to register in to the system prior to get the medication. The patient has to submit his NIC number, first name, last name, treatment category code and age as the data for registration and at the end of successful registration prescription reference number will be issued by the system by appending the NIC number and treatment category code (851234521V + 1 → 8512345211). Treatment category codes are included in the figure 2. The system will display the treatment category table during the registration process, so that the data entry operator does not need to remember these codes.

Treatment Category	Code
Cardiologist	1
Neurologist	2
Pediatric	3
Orthopedic	4
Nephrologists	5
Clinical	6

Figure 2- Treatment categories

The system will display a message saying “OPD is full. Please wait for a moment!” when the ten seats are reserved for the patients. OPD seats are vacant when the patients are sent for the medication and at that time the next patient can be able to register.

Process

Each patient in the OPD is sent to the relevant specialist for the medication according to the order they have been registered in the OPD. The operator has to maintain the status of the patient after the diagnosis. The status of the patient is recorded in to the prescription by the doctor and there are three main statuses available as shown in the figure 3.

Normal Condition	→ N
Residential Condition	→ R
Emergency Condition	→ E

Figure 3 –Patient Status

If the patient is diagnosed by the specialist his record is removed from the OPD list and updated as follows according to the status.

If the patients’ condition is normal, he will be sent to the pharmacy. His information in the OPD list is removed and updated in to the treated list.

Treated list is updated by the patient’s information if the patient’s condition is normal or when the patient discharge from the hospital.

Sometimes patients status can updated as either residential or emergency.

If the condition is residential, that patient is sent to the ward according to the availability of beds. Ward has only eight beds. System displays a message saying that “Sorry! We don’t have ward facility to treat this patient”, if there are no beds available in the ward. In such a situation patient is sent to other regional hospital and patient record is updated in to the treated list.

If the condition is an emergency, that patient is sent to the ICU according to the availability of beds. ICU has only five beds. System displays a message saying that “Sorry! We don’t have ICU facility to treat this patient”, if there are no beds available in the ICU. In such a situation patient is sent to other regional hospital and patient record is updated in to the treated list.

Display

When the operator selects the display option following prompt (figure 4) will be displayed.

Display Residential Patients	[1]
Display Emergency Patients	[2]
Enter your choice: _	

Figure 4 – Display option list

System will display the patient list according to the option that the operator entered.

Search

Search option helps to find the patients' details according to the given NIC number. When the operator selects this option system will prompt to enter the NIC number of the patient. Then the system will search that patient from the treated list and display the information as shown in the figure 5. If there is no such patient found the system will display an error message.

<u>2 Treatment Record has been found</u>	
Prescription ID	: 8512345211
Name	: Saman Perera
Status	:E
<hr/>	
Prescription ID	: 8512345216
Name	: Saman Perera
Status	:N
<hr/>	

Figure 5 – Search Results

Order

Order option displays the treated patients count according the age as shown in the following figure 6.

Age	# of Patients
<20	14
<40	35
<60	10
<80	4
<120	2

Figure 6 – Patients According to the Age

Exit

The program should terminate when the operator selects the option 7.

General Instruction

When the user chooses a valid option (1 to 6), program should perform the tasks described above and finally the program should display the option list again. When the user enters any invalid input, program should display an error message and then program should display the option list again.

Task

1. Write a C program for above mentioned requirements.
2. You have to select the possible data structures to maintain the OPD list, emergency list, residential list and the treated list.

Submission:

1. You must submit the source code of the program on or before 17/01/2011 3.00 P.M.
2. Submission can be done electronically via LMS.
3. Name the submission folder from your registration no. e.g. AS_08_09_000.zip or AS_08_09_000.rar
4. Your submission folder must contain the source code of your program
5. **Important: Your program should not have any compilation errors and run time errors.**

Late Submissions

1. An assignment is considered to be late if it is not submitted on or before the published submission date/time.
2. 50% of the marks will be deducted for late submission.

Evaluation

1. Evaluation will be done based on a VIVA.
2. You can score maximally 10% of marks for this assignment.

Plagiarism

1. All programming work must be your own.
2. All forms of plagiarism and cheating (for example downloading programs directly from the Internet or copying from another student) are regarded seriously and could result in heavy penalties (0 marks) including failure in the assignment.