



Department of Computer Science and Mathematics

CSC490: Software Engineering

Hospital Management System

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I. Abstract

The aim of this software system is to build a system that the hospital can use to control its operations in a reliable and efficient manner. The hospital will be able to serve the patient in a timely and effective manner due to this program. In addition, the system should allow multiple users to simultaneously view, alter, insert, and delete data. Moreover, the purpose of this phase is to test this program and validate it to ensure that it will run successfully without bugs and malfunctioning. Overall, checking this system is an important step that must be completed in order for the system to be effectively presented to the client and used by him successfully.

II. Introduction

Following the completion of the coding for our hospital management system, we reviewed the program to ensure that it performed as anticipated. We checked various aspects of the software several times with differing input and test cases to see whether we could find any bugs, flaws, or errors and correct them. Testing the system requires different inputs to be inserted each times for the purpose of generating different outputs. The tables represented below will illustrates some of the test cases we conducted with the output. Additionally, some of the outputs will be displayed as a screenshoted figure to make it easier to understand the system and the process.

III. Test Cases:

1. Subsystem 1: Hospital Services Management:

Testing Objective	Input	Output	Error Found	Change Implemented
Add new patient to the hospital	First name: Gheeda Last name: Choucair Gender: F Date of Birth: 10/10/2001 Phone number: 70082890 Diagnosis: Fever Allergies: No allergies Admitting Dr. Name: Smith Insurance: LAU Insurance Reason: high fever Address: Beirut / Lebanon	Your ID is: 182532021 Admission Done!	-	-
Ensure that the patient data are successfully saved in the system	Enter Patient ID: 182532021	First_Name: Gheeda Last_Name: Choucair ID: 678762021 Gender: F Date_of_Birth: 10 10 2001 Financial_Status: LAU Insurance Phone_Number: 70082890 Diagnosis: Fever	-	-

		Address: Beirut/Lebanon Date_of_Entry: 2021-05-12 Allergies: No Allergies Reason_of_Entrance: High Fever Admitting_Dr_Name: Smith		
Display a patient by Inserting an ID that is not in the system	123452021	NO SUCH PATIENT EXISTS	-	-
Assigning a room that is already assigned to a patient	Enter the room ID: 409	This Room is already reserved, please enter a valid room ID	-	-
Take an appointment in the hospital	Date: Tuesday Time: 9 am Dr. Name: Smith First Name: Reine Last Name: El Ferekh ID: 432422021	APPOINTMENT RESERVED SUCCESSFULLY!	-	-
Take an appointment for a patient with wrong ID	Date: Tuesday Time: 9 am Dr. Name: Smith First Name: Reine Last Name: El Ferekh ID: 4332422021 (10 digits)	You entered a wrong ID Press re-enter a correct ID.	-	-

Taking an Appointment that is Already taken	Date: Tuesday Time: 9 am Dr. Name: Smith First Name: Gheeda Last Name: Choucair ID: 123452021	THIS APPOINTMENT IS RESERVED, PLEASE CHOOSE ANOTHER TIMING!	-	-
Delete An appointment for a specific patient	Date: Wednesday Time: 10 am Dr. Name: Smith First Name: Rania Last Name: Dakroub ID: 564662021	APPOINTMENT DELETED SUCCESSFULLY!	-	-
Try to delete an appointment that does not exist	Date: Wednesday Time: 10 am Dr. Name: Smith First Name: Sara Last Name: Kassem ID: 534652021	THE DAY AND/OR TIME YOU ENTERED IS NOT CORRECT.	-	-
Try to delete an appointment for a wrong patient	Date: Wednesday Time: 10 am Dr. Name: Smith First Name: Mirna Last Name: Alameh ID: 435462021	NO SUCH APPOINTMENT EXISTS	-	-

Trying to take an appointment out of the schedule time	Date: Wednesday Time: 5 pm (Not in schedule) Dr. Name: Smith First Name: Hassan Last Name: Mshawrab ID: 356372021	THE DAY AND/OR TIME YOU ENTERED IS NOT CORRECT.	-	-
Display the appointment sheet for a specific Doctor	Enter the Doctor name: Smith	Appointments of Dr. Smith are displayed, please choose from them: TABLE	-	-

2. Subsystem 2: Billing and Financial Management:

Testing Objective	Input	Output	Error Found	Change Implemented
Calculating the profits that the hospital has made.	Costs: Patients: 342000\$ Selling Medicine: 43290\$ Donations: 29876\$ 100000\$ 139623\$	654789\$	-	-
Calculating the total salaries of all the	Salaries: Employee1: 12000\$	389786\$	-	-

employees in the hospital.	Employee2: 150000\$ Employee3: 19000\$ Employee4: 9000\$ Employee5: 100000\$ Employee6: 10000\$ Employee7: 89786\$			
Calculating the net profits in the hospital.	Profits: 654789\$ Total Wages: 389786\$	Net Profits: $654789 - 389786 = 265003\$	-	-
Generating patient Invoice.	Name: Ahmad ID: 000002021	First Name: Ahmad Last Name: Fawaz Phone Number: 76854222 Address: Beirut, Lebanon Bill: 12345\$	-	-

3. Subsystem 3: Employee Management:

Testing Objective	Input	Output	Error Found	Change Implemented
Generating IDs for employee automatically using	Enter Employee 1 Data: <div>FName: Hasan</div> <div>MName: X</div>	The ID generated Successfully! The ID generated Successfully!	-	-

their date of hire - and it is done by calling the instructor only.	LName: Mshawrab Gender: M Mobile: 71000111 Nationality: Lebanese Residence: em1R DOB: 1/22/2000 Specialty: Heart Degree: M.D			
Searching for employees by their FName	Enter Employee Name: Hasan	All Employees whose FName = "Hasan" are: EmployeeHData{	-	-

		empID=20210512000, position='Doctor', department='Heart', supervisorID=0} EmployeeHData{ empID=20210512004, position='Doctor', department='Heart', supervisorID=0} EmployeeHData{ empID=20210512008, position='Doctor', department='Heart', supervisorID=0}		
Set schedule for employee working in Covid-19 Department	Enter Employee: Em1 Em2 Em3 Em4	Shift schedule was set successfully for 20210512001! Shift schedule was set successfully for 20210512002! Shift schedule was set successfully for 20210512003!	-	-
Print Covid-19 Department daily schedule	Enter the name of department: CovidDep	CovidDep Shifts: 20210512003 - Night shift 20210512002 - Swing shift 20210512001 - Day shift	-	-

Inserting employee to a shift that has no need for extra employees during the assigned shift	Insert the Employee: em8H Insert working shift: Day Shift	Day shifts have been occupied all! Choose another shift for the employee!	-	-
Searching for an employee by his/her FName that is not in the system:	Insert Employee FName for search: Hadi	There is no Employees with this FName: " Hadi"	-	-

IV. Output Figures:

1. Subsystem 1: Hospital Services Management:

WELCOME TO THE HOSPITAL ADMISSION SYSTEM

Please enter the patient Information to Admit

First Name:

Gheeda

Last Name:

Choucair

Gender:

F

Date of Birth:

10102001

Phone Number:

7082890

Diagnosis:

Fever

Allergies:

Non

Admissting Dr. Name:

Smith

Insurance Status:

LAUInsurance

Reason of Entrance:

Fever

Address:

Beirut

The available rooms are:

[409, 408, 407, 406, 405, 309, 404, 308, 403, 307, 402, 306, 401, 305, 400, 209, 304, 208, 303, 207, 302, 206, 301, 205, 300, 109, 204, 108, 203, 107, 202, 106, 201, 105, 200,

Please choose an available room:

409

The patient ID is: 519522021

Admission Done!

WELCOME TO THE APPOINTMENTS SYSTEM

Please Enter the name of the Dr. you want to take an appointment with:

Smith

Appointments of Dr. Smith are displayed, please choose from them

Time \ Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 - 9 am						
9 - 10 am						
10 - 11 am						
12 - 1 pm						
1 - 2 pm						
2 - 3 pm						
3 - 4 pm						

APPOINTMENT RESERVED SUCCESSFULLY!

APPOINTMENT RESERVED SUCCESSFULLY!

APPOINTMENT RESERVED SUCCESSFULLY!

APPOINTMENT RESERVED SUCCESSFULLY!

Appointments of Dr. Smith are displayed, please choose from them

Time \ Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 - 9 am						
9 - 10 am	Reine 432422021	Gheeda 123452021				
10 - 11 am			Rania 564662021			
12 - 1 pm						
1 - 2 pm						
2 - 3 pm						
3 - 4 pm					Hasan 356372021	

Please Enter the name of the patient you want to delete his/her appointment:

First Name:

Sara

Last Name:

Kassem

Day:

tues

Time:

9

ID:

71562021

Phone Number:

71565234

NO SUCH APPOINTMENT EXISTS

Appointments of Dr. Smith are displayed, please choose from them

Time \ Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 - 9 am						
9 - 10 am	Reine 432422021	Gheeda 123452021				
10 - 11 am			Rania 564662021			
12 - 1 pm						
1 - 2 pm						
2 - 3 pm						
3 - 4 pm					Hasan 356372021	

Please Enter the name of the patient you want to delete his/her appointment:

First Name:

Hasan

Last Name:

Mshawrab

Day:

Fri

Time:

3

ID:

356372021

Phone Number:

123456789

APPOINTMENT DELETED SUCCESSFULLY!

Appointments of Dr. Smith are displayed, please choose from them

Time \ Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 - 9 am						
9 - 10 am	Reine 432422021	Gheeda 123452021				
10 - 11 am			Rania 564662021			
12 - 1 pm						
1 - 2 pm						
2 - 3 pm						
3 - 4 pm						

2. Subsystem 3: Employee Management:

```
All Employees whose FName: "Hasan" are:
EmployeeHData{empID=20210513000, position='Doctor', department='Heart', supervisorID=0}
EmployeeHData{empID=20210513004, position='Doctor', department='Heart', supervisorID=0}
EmployeeHData{empID=20210513008, position='Doctor', department='Heart', supervisorID=0}
```

```
Print CovidDep Schedule:
```

```
+-----+
| CovidDep Shifts:      |
| 20210513003 - Night shift |
| 20210513002 - Swing shift |
| 20210513001 - Day shift  |
+-----+
```

```
Set schedule for Employee 2,3,4 in my system to CovidDep:
Shift schedule was set successfully for 20210513001!
Shift schedule was set successfully for 20210513002!
Shift schedule was set successfully for 20210513003!
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V. Codes Attached:



Hospital_Services_Management_Codes.zip



billing and financial management system.zip



Employee_Management.zip

VI. Appendix:

1. Coordinator Report:

Coordinator Name: Reine El Ferekh

Meetings:

Dates	Members Present	Duration
7 May	Gheeda Choucair Rania Dakroub Reine El Ferekh Hasan Mshawrab	3 hours
8 May	Gheeda Choucair Rania Dakroub Reine El Ferekh Hasan Mshawrab	4 hours
10 May	Gheeda Choucair Rania Dakroub Reine El Ferekh Hasan Mshawrab	3 hours
11 May	Gheeda Choucair Rania Dakroub Reine El Ferekh Hasan Mshawrab	2 hours
12 May	Gheeda Choucair	4 hours

	Rania Dakroub Reine El Ferekh Hasan Mshawrab	
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Signature:

Gheeda Tchoucair

Rania Dakroub

Reine El Ferekh

Hasan Mshawrab