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| ID | Description | Pre-Conditions | Test Data | Expected Result | Steps to Execute | Actual Result | Status | Comments |
|  | Start/Compile the program |  | Gcc / C++ Compiler | Program compiles with no errors and launches the home menu | 1. Run/Compile the code | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Register a new patient with Valid Details |  | Menu Option:  2  Username: AliceBrown  Password: Secure!Pass5 | Patient Account successfully created | 1. Home menu option 2 2. Input AliceBrown 3. Input Secure!Pass5 |  | PASS |  |
|  | Register a new patient with a short password |  | Username: GeorgeHill  Password: b@dPas1 | Error message: “Password is invalid”  Get user to input new password | 1. Home menu option 2 2. Input GeorgeHill 3. Input b@dPas1 | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Register a new patient without a special character in the password |  | Username:  GeorgeHill  Password: SecurePass123 | Error message password is invalid  Get user to input a different password | 1. Home menu option 2 2. Input GeorgeHill 3. Input SecurePass123 | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Register a new patient without a number in the password |  | Username:  GeorgeHill  Password: SecurePass??? | Error message password is invalid  Get user to input a different password | 1. Home menu option 2 2. Input GeorgeHill   SecurePass??? | A screenshot of a computer  AI-generated content may be incorrect. | Pass |  |
|  | Register a patient with an existing username |  | Username: patient | Error message: “Username is already in use”  Get user to input a different username | 1. Home menu option 2 2. Input patient | A screenshot of a computer  AI-generated content may be incorrect. | Pass |  |
|  | Register a patient with an invalid username |  | Username: user#name | Error message: Invalid Username  Get user to input a different username | 1. Home menu option 2 2. Input user#name | A screenshot of a computer  AI-generated content may be incorrect. | FAIL | A screenshot of a computer  AI-generated content may be incorrect. |
|  | Login with valid username and password |  | Username: patient  Password: SecurePatient123? | User logs in and sees main menu | 1. Home menu option 2 2. Input patient 3. Input SecurePatient123? | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | Pass |  |
|  | Login with Invalid Password |  | Username: patient  Password: InsecurePatient123? | Program denies entry and asks user if they want to retry | 1. Home menu option 2 2. Input patient 3. Input InsecurePatient123? | A screenshot of a computer  AI-generated content may be incorrect. | Pass |  |
|  | Enter an invalid menu option in the main menu | User must be logged in | Main Menu Option: 10 | Error menu invalid option | 1. Login 2. Main menu option 1 | A screenshot of a computer  AI-generated content may be incorrect. | Pass |  |
|  | View user details after login | User must be logged in | Main Menu Option: 1 | Displays correct details | 1. Login 2. Main menu option 1 | A screenshot of a computer  AI-generated content may be incorrect. | Pass |  |
|  | Assign a patient to a doctor | User must be logged in  User must be a doctor | Main Menu Option: 7  PatientID 6 | The patient is now listed when the doctor goes to view their list of patients | 1. Login as doctor 2. Main menu option 7 3. Input one of the listed IDs | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS | User 6 is now listed in doctor’s patient list  (The Doctor’s username is ‘doctor’) |
|  | Assign a patient to a nurse | User must be logged in  User must be a nurse | Main Menu Option: 8  PatientID 8 | Nurse’s name is updated for the patient | 1. Login as nurse 2. Main Menu Option 8 3. Input one of the listed IDs | A screenshot of a computer  AI-generated content may be incorrect.A computer screen with white text  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS | The Nurse’s username is ‘nurse’ |
|  | Attempt to assign a doctor to a patient that isn’t listed | User must be logged in  User must be a doctor | Main Menu Option: 7  Patient ID 8 | Error message stating the user is not your patient | 1. Login as doctor 2. Main menu option 7 3. Input an ID that isn’t listed | A screenshot of a computer screen  AI-generated content may be incorrect. | FAIL | A screenshot of a computer screen  AI-generated content may be incorrect. |
|  | Attempt to assign a nurse to a patient that isn’t listed | User must be logged in  User must be a nurse | Main Menu Option: 8  Invalid PatientID 8 | No Change | 1. Login as nurse 2. Main menu option 8 3. Input an ID that isn’t listed | A computer screen with white text  AI-generated content may be incorrect.  Same issue as doctor | FAIL | A computer screen with white text  AI-generated content may be incorrect. |
|  | Try to access patients as a non-doctor | User must be logged in  User must be a patient | Main Menu Option 2 | Access denied message | 1. Login as patient 2. Main menu option 2 | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Add a new condition to a patient | User must be logged in  User must be a doctor | Main Menu Option 2  Patient ID 7  Option 2  Condition ID 7 | Condition successfully added to the patient’s record | 1. Login as doctor 2. Main menu option 2 3. Input a listed ID 4. Option 2 5. Input a condition ID | A screenshot of a computer  AI-generated content may be incorrect.  A screenshot of a computer  AI-generated content may be incorrect.  A screenshot of a computer program  AI-generated content may be incorrect.  A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Remove a condition from a patient that they don’t have | User must be logged in  User must be a doctor | Main Menu Option 2  Patient ID  Option 1  Invalid Condition ID | Error saying patient doesn’t have that treatment | 1. Main Menu Option 2 2. Input a listed patient ID 3. Menu Option 1 4. Input a condition ID that isn’t listed | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | FAIL | A screenshot of a computer  AI-generated content may be incorrect. |
|  | Access a patient’s details that is not assigned to the doctor | User must be logged in  User must be a doctor | Main Menu Option 2  Patient ID 8 | Not proceed, program make doctor re-enter a valid ID | 1. Main Menu Option 2 2. Input a patient ID that isn’t listed | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. Nothing happens, just removes my input | FAIL | A screenshot of a computer  AI-generated content may be incorrect. |
|  | Remove/treat a condition from a patient | User must be logged in  User must be a doctor | Main Menu Option 2  Patient ID  Option 1  Condition ID | Condition successfully removed from the patient’s record | 1. Login as doctor 2. Main menu option 2 3. Input a listed ID 4. Option 1 5. Input a condition ID the user has | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Attempt to add a condition to a patient currently doing chemotherapy | User must be logged in  User must be a doctor | Main Menu Option 2  Patient ID  Option 2 | Error messaging stating the patient cannot have more treatments | 1. Login as doctor 2. Main menu option 2 3. Input a listed ID for a patient doing chemotherapy | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Attempt to add duplicate conditions to a patient | User must be logged in  User must be a doctor | Main Menu Option 2  Patient ID  Option 2 | Error stating the patient already has this condition | 1. Login as doctor 2. Main menu option 2 3. Input a listed ID 4. Option 2 5. Input condition ID of a condition they already have | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Register a doctor/nurse as a patient | User must be logged in  User must be a patient | Main Menu Option 5 | Error stating that only doctors/nurses/pharmacists can register new doctors | 1. Login as patient 2. Main menu option 5 | A screenshot of a computer  AI-generated content may be incorrect. |  |  |
|  | Register a Pharmacist as a patient | User must be logged in  User must be a Pharmacist | Main Menu Option 6 | Error stating that only pharmacists can register new pharmacists | 1. Login as patient 2. Main menu option 6 | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Register a Pharmacist as a doctor/nurse | User must be logged in  User must be a doctor/nurse | Main Menu Option 6 | Error stating that only pharmacists can register new pharmacists | 1. Login as doctor/nurse 2. Main menu option 6 | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Register a new doctor as a doctor | User must be logged in  User must be a doctor | Main Menu option 5 | Doctor successfully registered | 1. Login as doctor 2. Register new doctor | A screenshot of a computer  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS | Uses same input checking as registering a patient |
|  | Register a new nurse as a doctor | User must be logged in  User must be a doctor | Main Menu Option 8 | Nurse successfully registered | 1. Login as doctor 2. Register new nurse | A screenshot of a computer  AI-generated content may be incorrect.A computer screen shot of a black screen  AI-generated content may be incorrect. | PASS | Uses same checking |
|  | Register a new doctor as a pharmacist | User must be logged in  User must be a Pharmacist | Main Menu Option 6 | Doctor successfully registered | 1. Login as pharmacist 2. Register new doctor |  | PASS | Uses same checking |
|  | Register a new nurse as a pharmacist | User must be logged in  User must be a Pharmacist | Main Menu Option 8 | Nurse successfully registered | 1. Login as pharmacist 2. Register new nurse | A computer screen shot of a black screen  AI-generated content may be incorrect. | PASS | Uses same checking |
|  | View statistics of average smoking and cancer age and frequency of both | User must be logged in  User must be a doctor/nurse/pharmacist | Main Menu Option 4 | Correct numbers calculated and displayed | 1. Login as doctor/nurse/pharmacist 2. Menu Option 4 | A computer screen shot of a black screen  AI-generated content may be incorrect.A computer screen with white text  AI-generated content may be incorrect. | PASS |  |
|  | Medical staff should not have any medical staff assigned to them | User must be logged in  User must be a doctor/nurse/pharmacist | Main Menu Option 2 | When viewing staff details, doctor/nurse says N/A | 1. Login as doctor/nurse/pharmacist 2. Menu Option 2 | A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Verify that passwords are hashed |  | USERDETAILS csv | User record password attribute should be hashed | 1. Register new user 2. View record in USERDETAILS csv | A screenshot of a computer  AI-generated content may be incorrect. | PASS | All passwords are hashed, no passwords are written in plaintext |
|  | Ensure logout functionality works | User must be already logged in | Main Menu Option 9 | System logs the user out and allows for users to log back in without restarting the program | 1. Login as any role 2. Menu Option 9 | A computer screen shot of a black screen  AI-generated content may be incorrect.A screenshot of a computer  AI-generated content may be incorrect. | PASS |  |
|  | Assign multiple conditions to the same patient | Doctor must be logged in  Patient must have the doctor assigned to them |  | Displayed correctly and treatment costs adjusted correctly | 1. |  |  |  |
|  | Test an empty conditions file |  |  | System handles correctly and doesn’t crash |  |  |  |  |
|  | Attempt to run program with CSV files missing |  |  | Program provides error message and exists safely | 1. Remove USERDETAILS csv 2. Compile |  |  |  |
|  | Exit the program using the menu |  | Menu Option 3 | System successfully and safely ends the program | 1. Enter Menu Option 3 on the start menu |  |  |  |
|  | Try accessing an invalid patient ID | User must be logged in  User must be a pharmacist | Patient ID | Error message stating the patient is not found | 1. Login 2. Menu Option 3 3. Enter Invalid Patient ID |  |  |  |
|  | Check CSV file after updating a patients condition |  |  | CSV reflects updated condition details | 1. Change a patients condition as a doctor 2. Check USERDETAILS csv to see if the record updated |  |  |  |
|  | Check treatment length display for a healthy patient | User must be logged in  User must be a doctor |  | Treatment should display as N/A | 1. Menu Option 2 2. Enter Healthy Patients ID |  |  |  |
|  | Check condition costs when user has no conditions | User must be logged in  User must be a doctor |  | All costs should be 0 | 1. Menu Option 2 2. Enter Healthy Patients ID |  |  |  |
|  | Remove/Treat all conditions from a patient | User must be logged in  User must be a doctor |  | Patient should display as healthy | 1. Main Menu Option 2 2. Enter Patient ID 3. Treat all conditions 4. Re-enter Patient ID |  |  |  |
|  | Enter negative age during registration |  | Age | Error showing that the age is invalid | 1. Menu Option 2 2. Enter Username and password 3. Enter negative age |  |  |  |