Product Requirements

Team: *201605-04-SWEN-261-TEAM-D-Unchained*

Revision Number	*Revision Date*	*Summary of Changes*	*Author(s)*
1.0	02/04/2017	Initial Revision, added Usecases and filled in all relevant fields	Team D

Brief problem statement

We represent a funding group (HAccelerator) chartered to create applications for the benefit of health-care across the country. The project we currently want to make a reality will be called **HealthNet**. At its core, HealthNet is meant to enable their hospitals in the US to be able to manage both employees and patients. The successful implementation should make it easy for users to effortlessly sign-up as patients so that the hospital can, without difficulty, manage their procedures and patient related tasks to optimize day-to-day work-flow.

The HealthNet product is intended to improve hospitals by providing an easy mechanism for managing employees, gathering statistical data on the inner workings of the hospital, signing up patients, making appointments, and allowing ease of transfer of both patients and their information between hospitals.

We want a product whose emphasis is on ease of use, whose navigation is straightforward and where the status of any, and all, information shown is clearly displayed. Ultimately, a system where understanding and communication about

An SQL database system with a user friendly front end interface that can be used to easily access upload and edit patient info, appointments, prescriptions, tests results and more. This system will also gather data on the inner workings of the hospital to provide a detailed statistical review of the

hospital.

Stakeholders

HAccelerator Board of Directors – oversee the projects funding and expenses. Have vested interest in the proven success of the product but are not involved in the planning and execution.

HAccelerator Product Owner – will act as principle representative for HealthNet product needs. He/she champions the product with the Board of Directors, helps facilitate product decisions and has the ultimate say on when and what features should be released.

Software Engineering Team – is responsible for the day-to-day operations and coordination of all aspects related to the software product's life-cycle. This include, among others: planning and delegation of team roles and responsibilities; elicitation and clarification of requirements; analysis and design; implementation, testing and release of all software components.

Beta Testing Team – represent the target user base for HealthNet. Will be available in later phases of the project to conduct acceptance testing and provide feedback on product release.

Users profile

The target user must:
- Have basic experience using computers and browsing the internet. Has filled out online forms or surveys and may have purchased or sold a product.
- Have a computer with access to the internet
- Have an interest in improving their health by using an online way of interacting with their hospital
- Be willing to share information such as home address and contact information as well as more personal information such as medical history

System requirements

At a high-level this project will be source controlled in SVN, run on Django using python, sqlite and needs to be compatible with the latest browsers.

Although the application needs to be accessible through the internet, deployments and demonstrations for this phase of the project will take place within the RIT Software Engineering environment. To this end, you must understand and document the target platforms from the perspective of the client browser as well as that of the server. Make

sure to capture versions or software dependencies, programming languages and hardware specifications that are available for your use and proceed only after you document and confirm these with the customer.

Feature requirements (user stories)

The following list of user stories is neither final nor comprehensive. You must consider it your responsibility to maintain its relevance, clarify any misunderstandings and keep it up-to-date. Any changes must be discussed with the Product Owner for approval.

No.	User Story Name	Description	Release
1	Patient Registration	Users sign up to become a Patient by providing their personal contact information, proof of insurance and unique login credentials. Additionally, a patient should provide the system with some basic medical profile information, a choice of preferred hospital and emergency contact information (linked to another patient if they are already in the system).	R1
2	Administrator Registration Doug	Doctors, Nurses, and Administrators will be added to the system by other administrators. All information for creating these new accounts will be done through an administrator account.	R2
3	Update Patient Profile Information	Patients can update their profile information.	R1
4	Update Patient Medical Information Jim	Doctors and Nurses can update patient medical information.	R2
5	Export Information [Later]	Patients will be able to export their information and their test results from the system with relevant privacy warnings.	R2

6	Create or Update Patient Appointment	Patients, doctors and nurses can create or update an appointment with a doctor and at one of the doctor's available locations. If the patient or doctor already has an appointment at the time selected, then the system will not allow for the appointment.	R1
7	Cancel Patient Appointment	Patients can cancel their existing appointments. Doctors can cancel their existing appointments. Nurses cannot cancel (only modify) existing appointments.	R1
8	Appointment Calendar	Doctors and patients will easily be able to view all of their appointments in a calendar view. Nurses will be able to see all appointments for the day and week between Patients and Doctors.	R1
9	Add/Remove Prescriptions	Doctors can add or remove a prescription to a patient record. Nurses can view the prescriptions of patients belonging to the same hospital. Patients can view their prescriptions from their account.	R2
10	Viewing Patient Medical Information, Prescriptions and Tests and Results	Doctors can view all medical information for any patient in the system (regardless of Hospital). Nurses can only view patient medical information in the hospital they work for. Patients can view their tests (pending or completed) and view the corresponding results for those tests that have been released by the doctor. Prescriptions and other non-sensitive information is viewable by the patient without a need for doctor's release.	R2

11	Release Test Results	Doctors (within the patient's hospital) can, upon evaluating a patient's test results, release them for view by that patient. Comments may be added to the specific test result for view by the patient.	**R2**
12	Logging System Activity	For security, many actions in the system will be logged for review at a later date. Some examples of actions to be logged include but are not limited to updating of a Patient's information, viewing of a Patients information/records, and transfers of a Patient from one hospital to another.	**R1**
13	Admission and Discharge to/from Hospital Doug	Doctors and Nurses can admit a patient to the hospital for an extended stay (reasons could be: emergency, observation, surgery, etc.). These are typically unexpected visits but can result from a decision made after a scheduled appointment. This event is recorded by the system. Doctors are the only ones to approve a patient's discharge from the Hospital. This event is recorded by the system.	**R2**
14	Viewing Activity Log	Administrators will be able to view the logs of all system activity for a given time-frame at their hospital. Some examples of this might be: - breakdown of the viewing activity of patient records or by system user - most common system activities (or by user) Other important and informative statistics yet to be determined.	**R1**

15	Viewing System Statistics Jacob	Administrators will be able to view compiled statistics for a given time-frame at their hospital. Some examples of this might be: - number of patients visiting the hospital - average number of visits per patient - average length of stay (from admission to discharge) - most common reasons for being admitted to the hospital - prescription statistics Other important and informative statistics yet to be determined.	**R2**
16	Patient Transfer	Patient can be transferred between hospitals. Transfers can be carried out by either administrators or by doctors (ones who are at the receiving hospital).	**R2**
17	Upload Patient Information	Doctors will be able to upload the results of a patient's tests if needed. Doctors will be able to upload images such as those used in X-Rays to update a patient's record. Uploads are considered as updates to a patient's medical information.	**R2**
18	Send Private Message Jacob	Doctors, nurses, patients and administrators can send private messages of limited length via the system.	**R2**

Use case context diagram

Patient Registration

Administrator Registration

Update Patient Profile Information

Update Patient Medical Information

Export Information

Create or Update Patient Appointment

Cancel Patient Appointment

Appointment Calendar

Add/Remove Prescriptions

Viewing Patient Medical Information, Prescriptions and Tests and Results

Release Test Results

Logging System Activity

Admission and Discharge to/from Hospital

Viewing Activity Log

Viewing System Statistics

Patient Transfer

Upload Patient Information

Send Private Message

Use case description

Use Case Number:	UC-01
Use Case Name:	Patient Registration
Overview:	Registrant shall provide personal, medical, and emergency contact information to the System upon registering and becoming a Patient.
Actor(s):	Registrant (Patient)
Pre-condition(s):	- System has been setup and configured. - System is running and open for registrations. - Registrant has accessed website via URL

Scenario Flow:	Main (success) Flow:
	
	1. Registrant selects option to register
	
	2. System requests <u>personal</u> information
	
	3. Registrant provided personal information.
	
	4. System verifies required information is provided.
	    ● If information is invalid System displays message. Return to Step 2
	
	5. System requests basic <u>medical</u> information
	
	6. Registrant provides medical information
	
	7. System verifies required information is provided.
	    ● If information is invalid System displays message. Return to Step 5
	
	8. System requests <u>emergency contact</u> information
	
	9. Registrant provides emergency contact information
	
	10. System verifies required information is provided
	    ○ If information is invalid System displays message. Return to Step 8
	
	11. System requests <u>login</u> information
	
	12. Registrant provides login information
	
	13. System verifies required information is provided
	    ○ If information is invalid System displays message. Return to Step 11
	
	14. System displays confirmation of registration

Alternate Flows:	Alternate Flow #1: After Step 2 in success scenario System will display the option to Cancel the registration process. The following steps would occur: 1. Registrant selects option to cancel during registration 2. System requests confirmation to cancel 3. Registrant confirms intent 4. System returns to main screen Alternate Flow #2: The emergency contact information is an existing user in the system. After step 10 the following steps would occur: 1. Registrant selects option to select an emergency contact from the

	system
	2. System displays a search bar for the Registrant to input the user's name
	3. Registrant inputs the user's name and presses enter
	4. System returns a list of users with matching names
	5. Registrant chooses intended user
	6. System sets that user as an emergency contact
Post Condition:	System has stored Registrant Information

Use Case Number:	UC-02
Use Case Name:	Staff Registration
Overview:	The admin shall provide personal information to the System upon registering another staff member, as well as adding their particular account type
Actor(s):	Register (Admin), New Staff Member
Pre-condition(s):	- System has been setup and configured.
	- System is running and open for registrations.
	- An administrator is logged in to their account
Scenario Flow:	Main (success) Flow:
	1. Admin selects option to register a staff member
	2. System requests <u>personal</u> information
	3. Admin provides staff member's personal information.
	4. System verifies required information is provided.
	● If information is invalid System displays message. Return to Step 2
	5. System requests staff member's position
	6. Admin provides staff member's position
	7. System verifies required information is provided.
	● If information is invalid System displays message. Return to

<table>
<tr><td colspan="2" align="center">Step 5</td></tr>
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8. System requests <u>login</u> information

9. Admin provides login information

10. System verifies required information is provided

  ○ If information is invalid System displays message. Return to Step 11

11. System displays confirmation of registration

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Alternate Flows:	Alternate Flow #1: After Step 2 in success scenario System will display the option to Cancel the registration process. The following steps would occur: 5. Admin selects option to cancel registration 6. System requests confirmation to cancel 7. Admin confirms intent 8. System returns to admin landing page
Post Condition:	System has stored Staff Member's Information and Account

Use Case Number:	UC-03
Use Case Name:	Update Patient Profile Information
Overview:	Patients can update their profile information.
Actor(s):	Patient
Pre-condition(s):	- System has been setup and configured. - System is running and open for use. - Registrant has accessed website via URL
Scenario Flow:	Main (success) Flow: 1. Patient logs in with their username and password a. If the login info is invalid, system displays message. Return to step 1. 2. Patient views landing page and selects the link to update their profile

	information.
	3. Patient selects field of information to update, append, or delete
	4. Patient makes desired edits to the information selectes
	5. Patient confirms their edits and the system saves their changes
	6. Patient is brought back to step 3 to update any additional information.
Alternate Flows:	Alternate Flow #1: After Step 4 in success scenario System will display the option to Cancel the edits. The following steps would occur:
	1. Registrant selects option to cancel during edits
	2. System requests confirmation to cancel
	3. Registrant confirms intent
	4. System returns to main screen
Post Condition:	System has stored Patient Information

Use Case Number:	UC-04
Use Case Name:	Update Patient Medical Information
Overview:	Doctors and Nurses can update a patient's medical information.
Actor(s):	Doctor or Nurse (Staff), Patient
Pre-condition(s):	- System has been setup and configured.
	- System is running and open for use.
	- The Nurse or Doctor exists
	- The Patient exists
Scenario Flow:	Main (success) Flow:
	1. Staff member logs in with their username and password
	a. If the login info is invalid, system displays message. Return to step 1.
	2. Staff member views landing page and selects the link to the patient list
	3. Staff member selects the patient whose medical info they wish to update
	4. Staff member selects field of information to update, append, or delete
	5. Staff member makes desired edits to the information selected
	6. Staff member confirms their edits and the system saves their changes
	7. Staff member is brought back to step 3 to update any additional

	information.
Alternate Flows:	Alternate Flow #1: After Step 4 in success scenario System will display the option to Cancel the edits. The following steps would occur: 5. Staff member selects option to cancel during edits 6. System requests confirmation to cancel 7. Staff member confirms intent 8. System returns to main screen
Post Condition:	System has stored updated Patient Medical Information

Use Case Number:	UC-05
Use Case Name:	Export Patient Information
Overview:	Doctors, patients, and nurses are able to export patient information and test results from the system with relevant privacy warnings.
Actor(s):	Patient, Doctor, Nurses
Pre-condition(s):	-Patient profile contains information -User level has access to patient information
Scenario Flow:	Main (success) Flow: 1. Actor navigates to patient information page 2. Actor selects "Download patient information" 3. System generates a .zip file containing information files the actor has access to 4. Actor downloads the zip file
Alternate Flows:	-None
Post Condition:	User can open and view information files

Use Case Number:	UC-06
Use Case Name:	Create or Update Patient Appointment
Overview:	Patients, doctors and nurses can create or update an appointment with a doctor and at one of the doctor's available locations. If the patient or doctor already has an appointment at the time selected, then the system will not allow for the appointment.
Actor(s):	Patient, Doctor, Nurses
Pre-condition(s):	- Date of appointment is known - Doctor cannot already have a meeting in that time slot

Scenario Flow:	Main (success) Flow:
	    5. Actor selects time slot they wish to edit.
	    6. Input name and brief description of problem being addressed in that time slot.
	    7. Save the log

Alternate Flows:	Alternate Flow #1: After Step 1 in success scenario System will display "Doctor Time Slot unavailable"
	    1. Registrant selects "ok"
	    2. Registrant selects another time slot
	    3. Input name and brief description of problem being addressed in that time slot.
	    4. saves log

Post Condition:	System has stored time slot

Use Case Number:	UC-07
Use Case	Cancel Patient Appointment

Name:	
Overview:	Patients can cancel their existing appointments. Doctors can cancel their existing appointments. Nurses cannot cancel (only modify) existing appointments.
Actor(s):	Patient, Doctor, Nurses
Pre-condition(s):	- Date of appointment is known
Scenario Flow:	Main (success) Flow: 1. Actor selects time slot they wish to edit. 2. Actor selects the "Cancel appointment" option 3. Input reason for cancellation 4. System displays confirmation of cancellation 5. Actor confirms their intent 6. System deletes the appointment 7. System sends a message (Planned feature) to the parties involved with the deleted appointment and reason entered
Alternate Flows:	Alternate Flow #1: After Step 4 in success scenario System will display the option to Cancel the cancellation process. The following steps would occur: 1. Actor selects option to cancel during process 2. System does not display confirmation, cancellation window disappears and Actor is brought to the calendar.
Post Condition:	System has deleted appointment, and sent message (planned feature)

Use Case Number:	UC-08
Use Case Name:	Appointment Calendar
Overview:	Doctors and patients will easily be able to view all of their appointments in a calendar view. Nurses will be able to see all appointments for the day and week between Patients and Doctors.
Actor(s):	Doctor, Nurses
Pre-condition(s):	-
Scenario Flow:	Main (success) Flow: 1. Actor selects their calendar 2. calendars will display in an organized fashion appointments for that day. 3. When an appointment is selected a brief description will be displayed
Alternate Flows:	
Post Condition:	System has stored Registrant Information

Use Case Number:	UC-09
Use Case Name:	View/Add/Remove Patient Prescriptions
Overview:	Doctors can add or remove a prescription to a patient record.

	Nurses can view the prescriptions of patients belonging to the same hospital. Patients can view their prescriptions from their account.
Actor(s):	Patient, Doctor, Nurses
Pre-condition(s):	- Patient must have a registered account for the hospital where they are being treated
Scenario Flow:	Main (success) Flow: 1. Actor navigates the the Prescriptions page 2. Prescriptions page displays prescription information
Alternate Flows:	Alternate Flow #1: After Step 2 in success scenario, if actor is a doctor: 1. Actor selects "Add/Remove Prescription" 2. Actor is shown a list of the patient's prescriptions and given an area to input new prescription information 3. Actor selects "add prescription information" 4. New prescription is added to the patient's profile Alternate Flow #2: After step 2 in Alternate Flow #1 1. Actor selects "remove this prescription" for an already existing prescription 2. Selected prescription is removed from the patient's profile 3. Actor's page is refreshed to show new prescription list
Post Condition:	Patient prescription page is updated with new prescription list

Use Case Number:	UC-10
Use Case Name:	Viewing Patient Medical Information, Prescriptions and Tests and Results
Overview:	Doctors can view all medical information for any patient in the system (regardless of Hospital). Nurses can only view patient medical information in the hospital they work for. Patients can view their tests (pending or completed) and view the corresponding results for those tests that have been released by the doctor.

Actor(s):	Patient, Doctor, Nurses
Pre-condition(s):	-Patient profile contains information -User level has access to patient information

Scenario Flow:	Main (success) Flow:
	
	   1. Actor navigates to patient information page
	   2. Actor selects "View Patient Information"
	   3. Actor is provided with links to all available patient information pages

Alternate Flows:	-None
Post Condition:	Actor can navigate to patient information pages

Use Case Number:	UC-12
Use Case Name:	Logging System Activity
Overview:	For security, many actions in the system will be logged for review at a later date. Some examples of actions to be logged include but are not limited to updating of a Patient's information, viewing of a Patient's information/records, and transfers of a Patient from one hospital to another.
Actor(s):	System
Pre-condition(s):	- System is configured and has users
Scenario Flow:	Main (success) Flow: 1. Loggable action is performed on the system

	2. System calls upon the event logger with the nature of the action
	3. the action is logged with the date, time, Actor, etc in SQL for later viewing by the Admin
Alternate Flows:	- None
Post Condition:	System has stored and logged the action Information

Use Case Number:	UC-14
Use Case Name:	Viewing Activity Log
Overview:	Administrators will be able to view the logs of all system activity for a given time-frame at their hospital. Some examples of this might be: - breakdown of the viewing activity of patient records or by system user - most common system activities (or by user) Other important and informative statistics yet to be determined.
Actor(s):	Admin
Pre-condition(s):	- System Activity has been logged - logs will be ordered chronologically
Scenario Flow:	Main (success) Flow: 1. Select activity logs 2. Select display alphabetically, or chronologically 3. View logs
Alternate Flows:	-None

Post Condition:	System has stored Registrant Information

Use Case Number:	UC-16
Use Case Name:	Patient Transfer
Overview:	Patients can be transferred to from a hospital by administrators or doctors at receiving hospital.
Actor(s):	Patient(s)
Pre-condition(s):	Patient is already registered within the system.
Scenario Flow:	**Main (success) Flow:** 1. Admin requests to transfer a Patient from a hospital in the database. 2. System verifies the Patient exists, returns the Patient and requests the target hospital. 3. Admin selects target hospital from database. 4. Patient info is updated with new hospital info.
Alternate Flows:	Alternate Flow #1: Before Step 1 in success scenario System will determine the user performing the transfer is a doctor. The following steps would occur: 1. Doctor requests to transfer a patient from a hospital in the database. 2. System verifies the Patient exists, returns the Patient with new hospital matching Doctor's. Alternate Flow #2. After Step 1 in success scenario System will display error message when hospital or patient doesn't exist. The following steps would occur: 1. System returns error message and returns to Step 1.
Post Condition:	Patient is transferred to new hospital.

Use Case Number:	UC-17
Use Case Name:	Upload Patient Information
Overview:	Doctors can upload medical test information for a Patient.
Actor(s):	Patient(s), Doctor
Pre-condition(s):	Patient is already registered within the system.
Scenario Flow:	*Main (success) Flow:* 1. Doctor requests to upload test information onto the server for a Patient to view. 2. System requests files to upload and related Patient. 3. Doctor uploads files and selects patient from the system. 4. System verifies the Patient exists and then uploads test information so that Patient can view it.
Alternate Flows:	Alternate Flow #1. After Step 1 in success scenario System will display error message when patient doesn't exist. The following steps would occur: 1. System returns error message and returns to Step 2.
Post Condition:	Patient is able to view new test information.

Use Case Number:	UC-18
Use Case Name:	Send Private Message
Overview:	Doctors, Nurses, Patients and Administrators can send private messages of max length to one another on the system.
Actor(s):	Patient(s), Doctor(s), Nurse(s), Admin(s)
Pre-condition(s):	Recipient account is already registered within the system.
Scenario Flow:	*Main (success) Flow :*

	1. User accesses messaging system on the server. 2. System gives form for message (Recipient(s), Subject, Message) for user to type in. 3. User types in recipient user's name(s) and message. 4. User selects send option. 5. Server sends message to recipient's inbox.
Alternate Flows:	Alternate Flow #1. After Step 1 in success scenario System will display error message when recipient doesn't exist or if message exceeds character limit. The following steps would occur: 1. User attempts to send message to non-existent recipient(s) and/or send message of invalid length. 2. System returns error message and returns to Step 2.
Post Condition:	Recipient has new message in inbox from the User.

Use Case Number:	UC-11
Use Case Name:	Release Test Results
Overview:	Doctors can release patient test results. Patients can view their test results after they are posted.
Actor(s):	Doctor, Patient
Pre-condition(s):	Doctor must have test results uploaded
Scenario Flow:	1. Doctor logs in 2. Doctor navigates to the patient's profile 3. Doctor selects release test results and selects test results of the current patient. 4. Patient logs in 5. Patient selects test results on their landing page 6. Patient can then view any test results released by their doctor
Alternate Flows:	None

Post Condition:	Test results are released for the patient to view

Use Case Number:	UC-13
Use Case Name:	Admission and Discharge to/from Hospital
Overview:	Doctors and Nurses can admit a patient to a hospital but only a doctor can discharge them.
Actor(s):	Doctor, Nurse
Pre-condition(s):	Patient must have a HealthNet Account at the Hospital they are staying at
Scenario Flow:	1. Employee logs in 2. Employee selects admit patient option on their landing page 3. Employee types in the patient name into the UI 4. Employee selects the patient they want to admit 5. Employee clicks the admit option 6. Prompt user of successful admission 7. Doctor can revisit patient and discharge them
Alternate Flows:	3. Employee types in wrong name a. No user would show up
Post Condition:	Patient is discharged or admitted to the hospital of their stay

Use Case Number:	UC-15
Use Case Name:	Viewing System Statistics
Overview:	Administrators will be able to view compiled statistics for a given time frame of their hospital.
Actor(s):	Administrator
Pre-condition(s):	There must be enough info in the database to compile stats
Scenario Flow:	1. Admin logs in 2. Admin selects stats option on landing page

	3. Stat UI shows up with all time frames
	    a. Admin can change time frame
	    b. UI shows appropriate time frame selected

Alternate Flows:	3. Admin selects Invalid time frame a. UI displays prompt saying invalid time frame.
Post Condition:	Stats are properly displayed to the admin