COMP3760: ENTERPRISE SYSTEMS INTEGRATION
Assignment 2: Skin Cancer Information System

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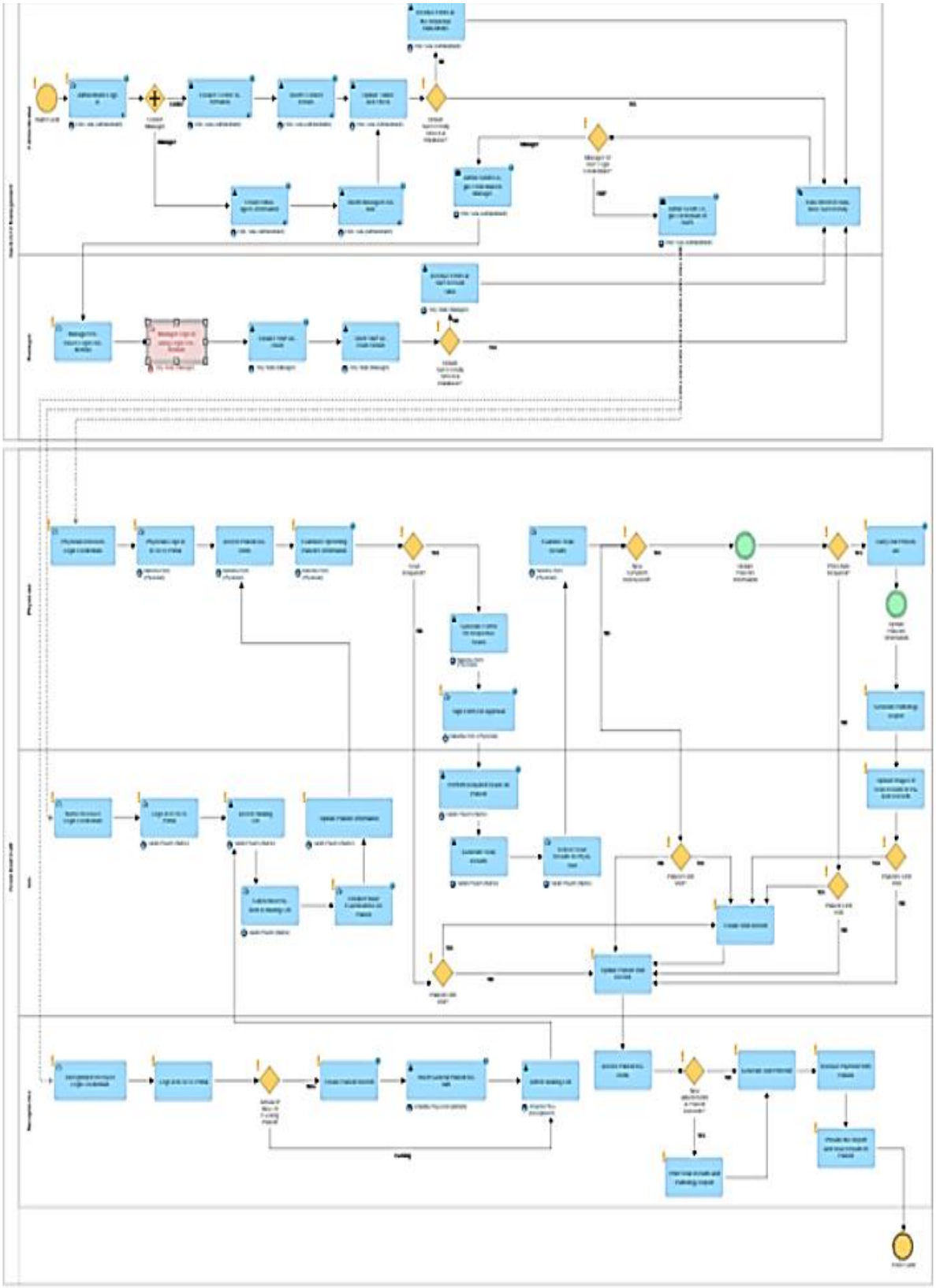
Contents:

INTRODUCTION:

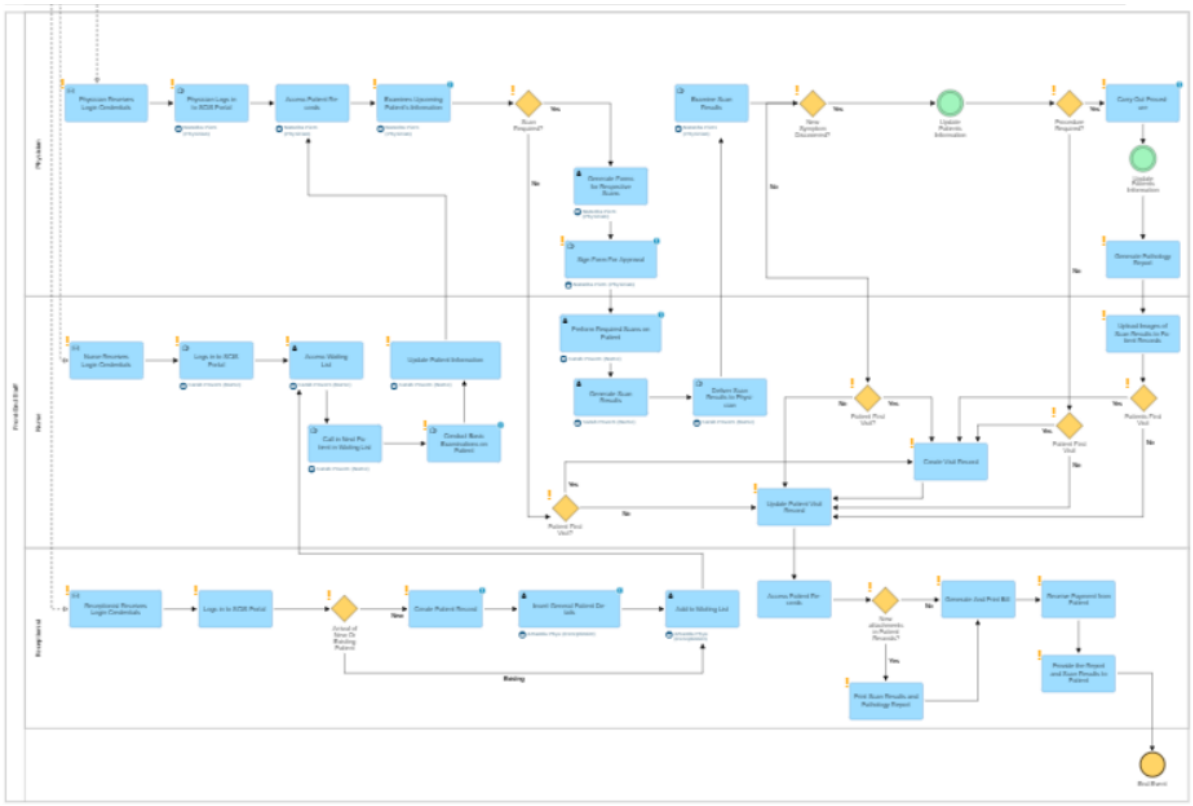
The Skin Cancer Information System (SCIS) is a considerably complex system that could be mismanaged easily if the process flows are not fundamentally concrete. Therefore, this report primarily focuses on the business process flow of SCIS and the designated roles that each actor carries out in this system. This model is the transformation from an as-is model to a to-be model, improved and modified on the basis of many logical assumptions which are explained briefly in the report. The actors in the model have been given fictional names due to some role-overlapping issues across other models saved in the cloud and hence to avoid any ambiguity, such names were given. The business process model is created and notated in ADONIS.

MODEL IMAGES:



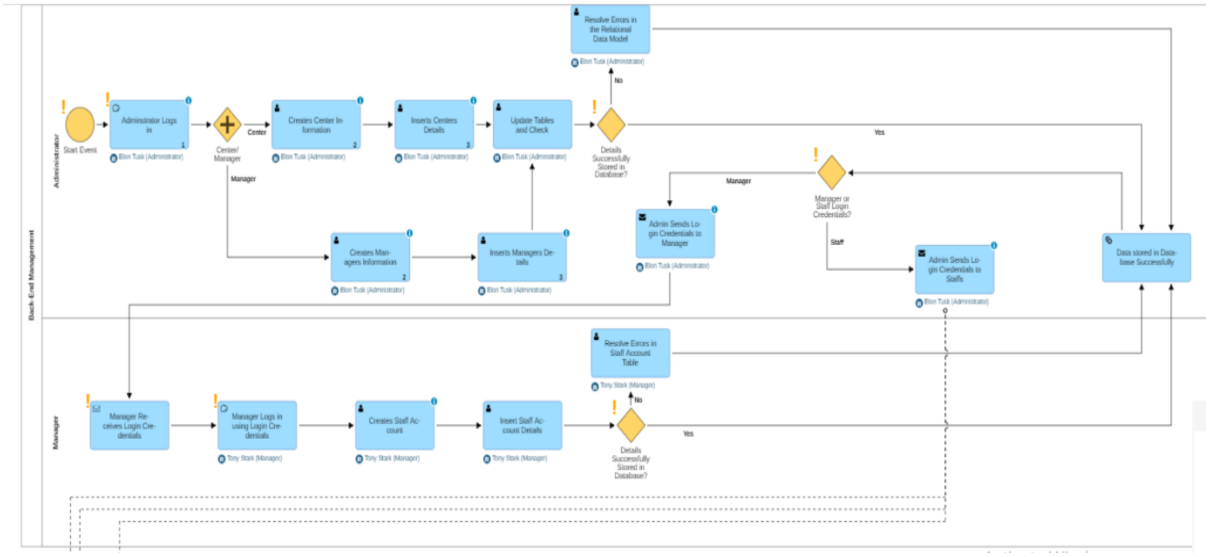
The total number of tasks in the model is between the ranges 55-60, with a few repetitive exclusive gateways to adhere to the syntax regulations of ADONIS.

Front End:



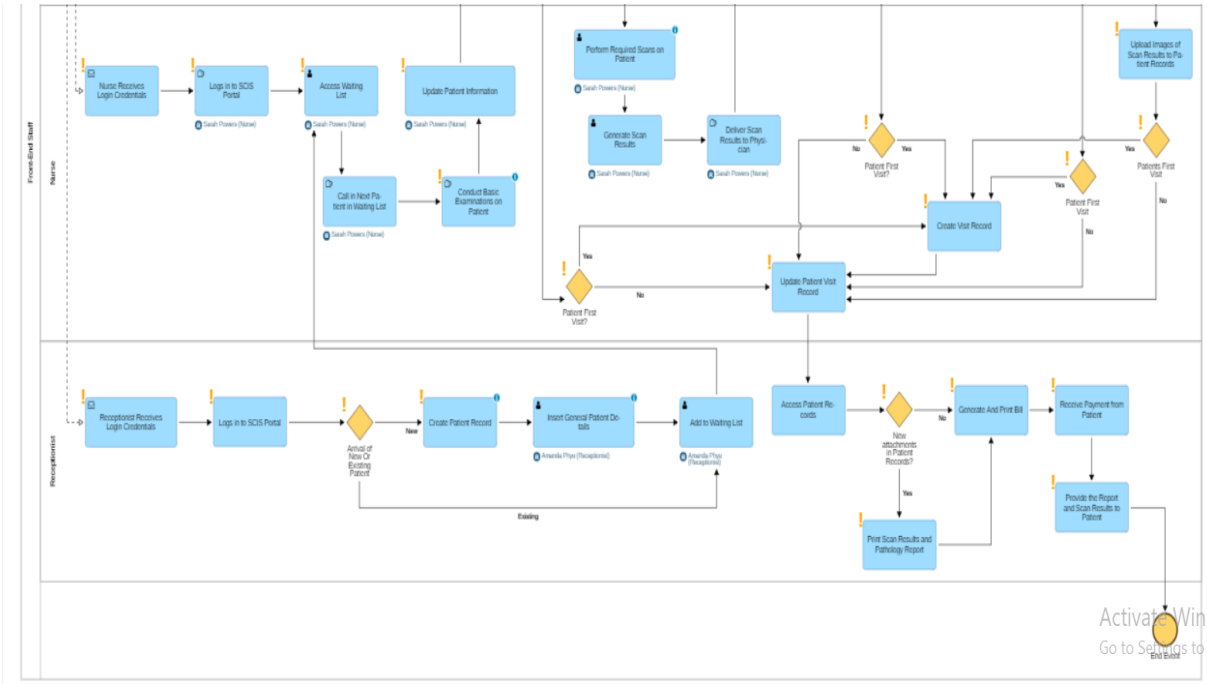
The Front End Pool Consists of three actors; Receptionist, Nurse and the Physician. Observed in the flow, we could see that there is no communication between Receptionist and Physician and that every flow goes through the Nurse, indicating the importance of the Nurse in the Front End process.

Back End:

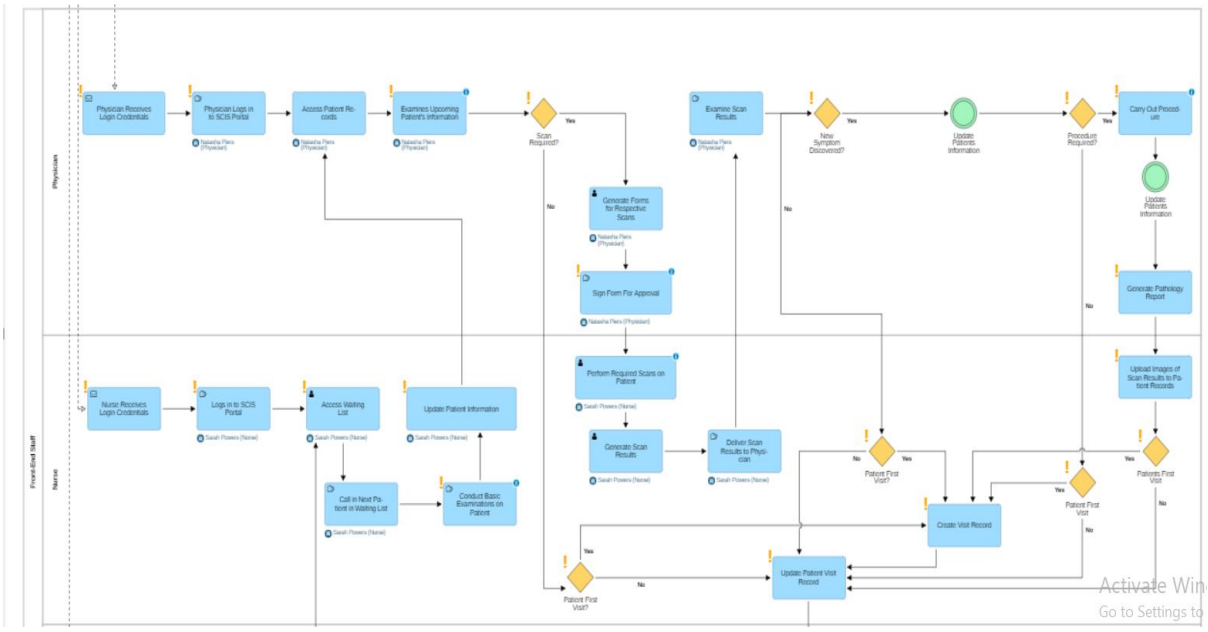


The Back End Pool consists of two actors; Administrator and Manager. Observed in the flow, all the staffs' login credentials are created and provided by the Admin.

Front-End In-Depth:



This image provides a closer look of the process flow between the receptionist and the nurse. Nurses tasks depends on the completion of receptionist tasks, as only when the waiting list is prepared, the nurse can gain access to it and proceed with his/her duties.



This image focuses on the process flow between the Nurse and the Physician. This is the most complex part of the model as the physician and the nurse works closely to carry out the tasks. This part of the model focuses on the diagnosis of a patient and how the model changes its course based on the diagnosis. Hence you could observe multiple exclusive gateways.

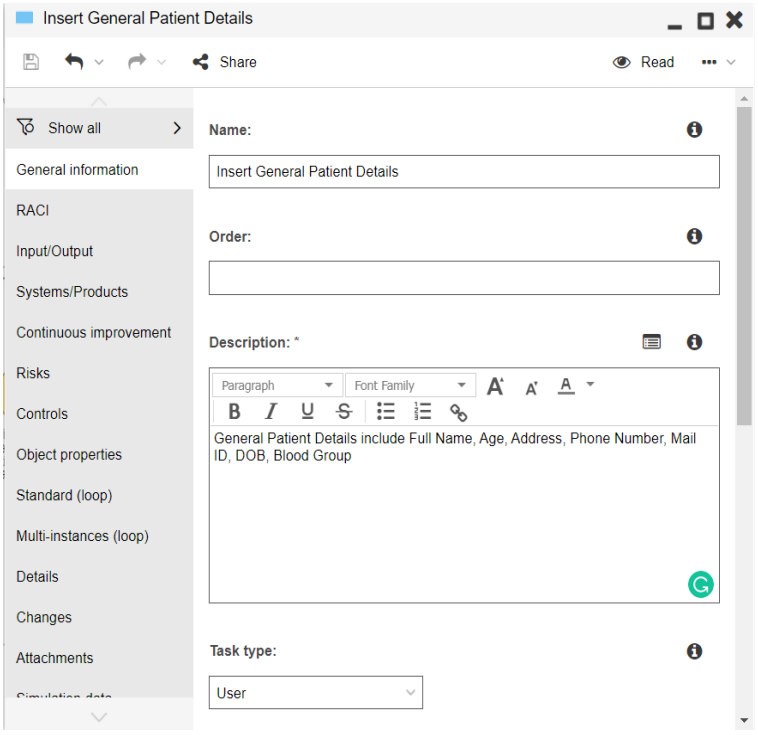
TABLE VIEW OF MODEL:

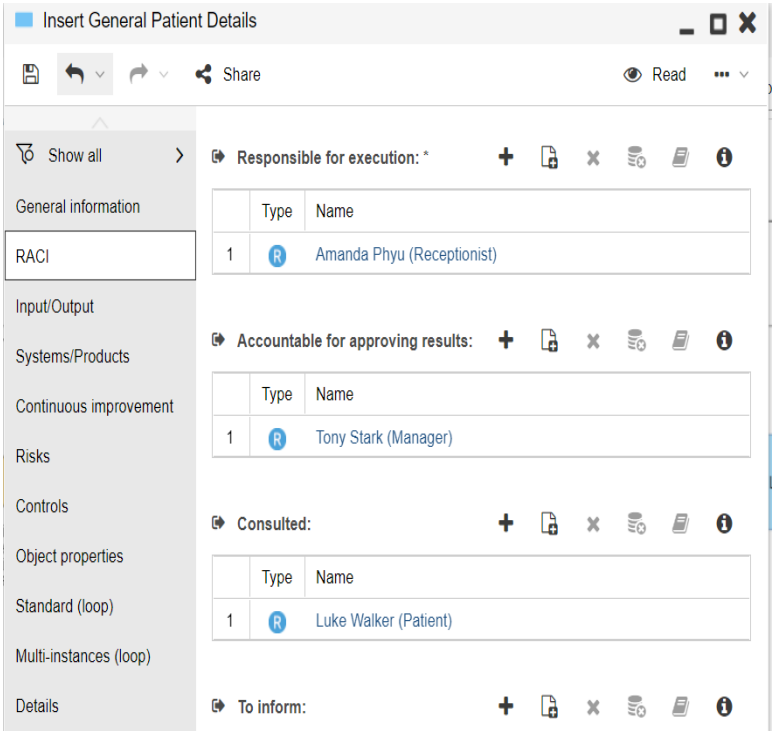
	Type	Name ↑	Order	Description	Classification
1		Arrival of New Or Existing P…			
2		Access Patient Records			
3		Access Patient Records			
4		Access Waiting List			semi-automati…
5		Add to Waiting List			semi-automatic
6		Admin Sends Login Credenti…		Admin sends created login credentials to resp…	communicating
7		Admin Sends Login Credenti…		Admin sends created login credentials to resp…	communicating
8		Administrator			
9		Adminstrator Logs in	1	Admin Logs into the Server using their login cr…	manual
10		Back-End Management			
11		Call in Next Patient in Waitin…			manual
12		Carry Out Procedure		Physician performs the required procedure on…	manual, semi-…
13		Center/Manager			
14		Conduct Basic Examinations…		Basic Examination Includes Height, Weight a…	manual, exec…
15		Create Patient Record		If the Patient Visits for First time, a new recor…	
16		Create Visit Record			
17		Creates Center Information	2	Create a Center Information Table in the Data…	semi-automatic
18		Creates Managers Information	2	Create a Manager Information Table in the Da…	semi-automatic
19		Creates Staff Account		Creates New Staff Account Table in the Datab…	semi-automatic
20		Data stored in Database Suc…			automatic
21		Deliver Scan Results to Phy…			manual
22		Details Successfully Stored i…			
23		Details Successfully Stored i…			
24		End Event			
25		Examine Scan Results			manual
26		Examines Upcoming Patient'…		Examines Details of Upcoming Patient update…	
27		Front-End Staff			
28		Generate And Print Bill			
29		Generate Forms for Respect…			semi-automatic
30		Generate Medical Report			
31		Generate Scan Results			semi-automatic
32		Insert General Patient Details		General Patient Details include Full Name, Ag…	semi-automati…
33		Insert Staff Account Details			semi-automatic
34		Inserts Centers Details	3	Inserts unique and not null values in the respe…	semi-automati…
35		Inserts Managers Details	3	Inserts unique and not null values in the respe…	semi-automatic
36		Logs in to SCIS Portal			
37		Logs in to SCIS Portal			manual
38		Manager			

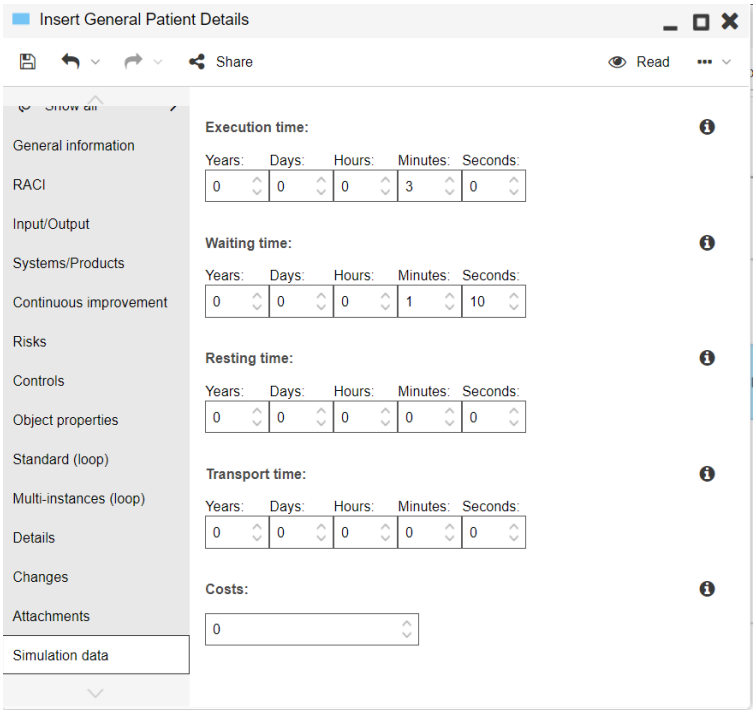
39		Manager Logs in using Login...		manual
40		Manager or Staff Login Cred...		
41		Manager Receives Login Cr...		communicating
42		New attachments in Patient ...		
43		New Symptom Discovered?		
44		Nurse		
45		Nurse Receives Login Crede...		communicating
46		Patient First Visit		
47		Patient First Visit?		
48		Patient First Visit?		
49		Patients First Visit		
50		Perform Required Scans on ...	Nurse performs necessary scans on Patient a...	semi-automatic
51		Physician		
52		Physician Logs in to SCIS P...		manual
53		Physician Receives Login Cr...		communicating
54		Print Scan Results and Path...		
55		Procedure Required?		
56		Provide the Report and Scan...		
57		Receive Payment from Patient		
58		Receptionist		
59		Receptionist Receives Login...		communicating
60		Resolve Errors in Staff Acco...		semi-automati...
61		Resolve Errors in the Relatio...		semi-automati...
62		Scan Required?		
63		Sign Form For Approval	Physician Signs Form For Approval	manual
64		Start Event		
65		Update Patient Information		
66		Update Patient Visit Record		
67		Update Patients Information	New information is updated in the Patients Re...	
68		Update Patients Information	New information is updated in the Patients Re...	
69		Update Tables and Check		semi-automatic
70		Upload Images of Scan Res...		

Majority of the events/tasks had their properties updated in some form. Many of the classification of the events are labelled as “semi-automatic” as the actor carries out the task using the SCIS, therefore indulging with some kind of automation rather than purely manual.

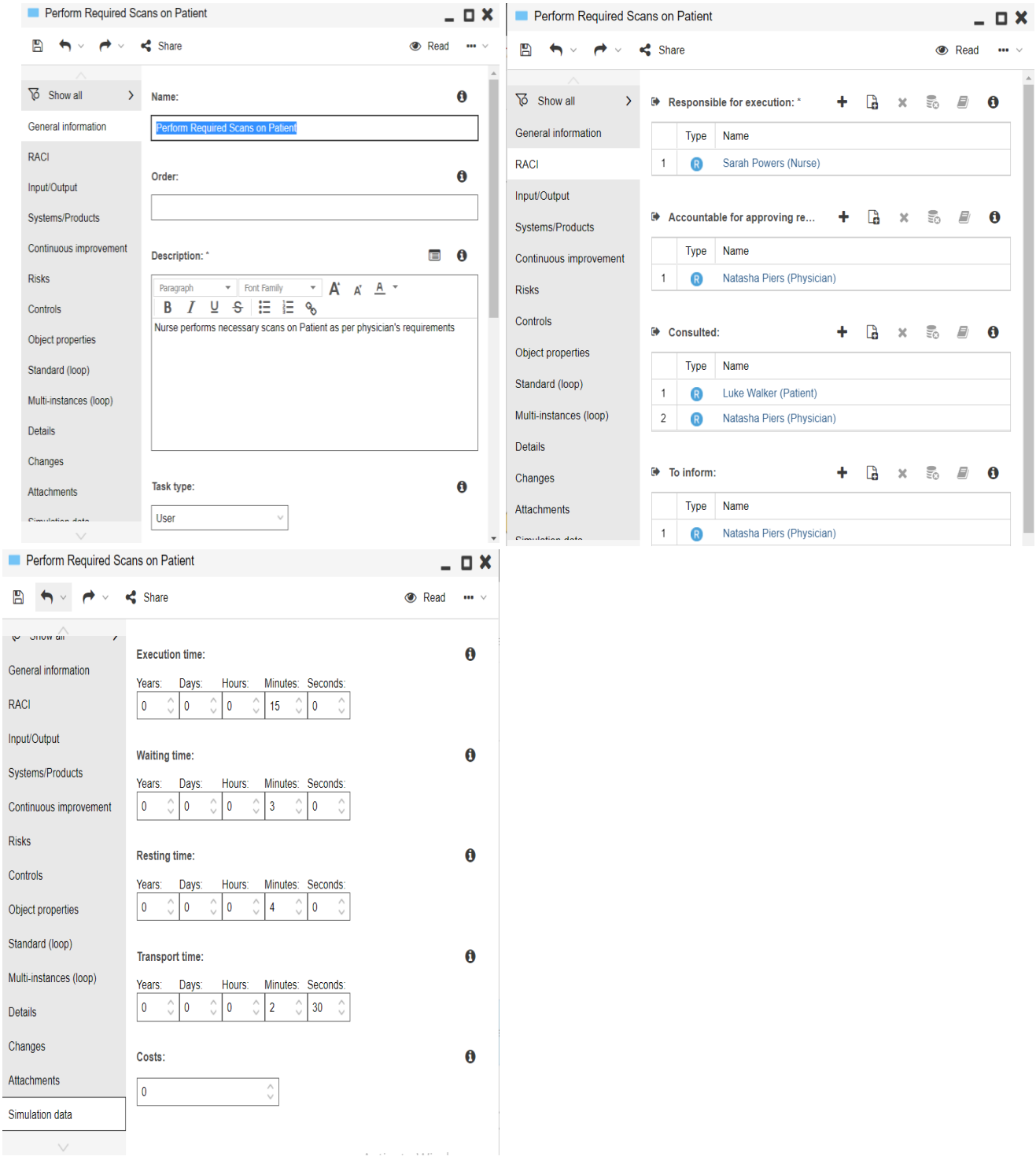
TASK PROPERTIES IMAGES:







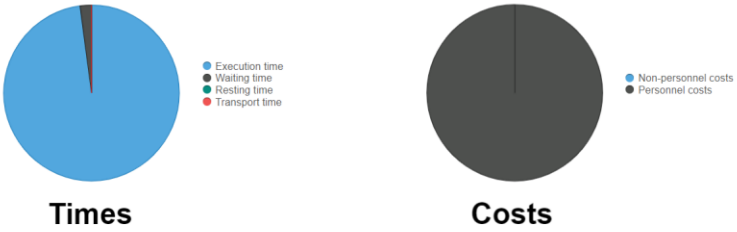
This task is executed by the receptionist and it is performed before adding the patient to the waiting list. This is an improved task from the as-is model as this flow is very time-efficient as majority of the information is collected and recorded before the patient is sent in to be examined. The execution time is set based on a logical sense of time taken to type the mentioned details in a computer.



This task is performed by the Nurse based on the Physicians instructions. For instance, the physician requires a blood sample to check for new symptoms, the nurse then escorts the patient to the blood sampling room to acquire a blood sample. The nurse performs the task, waits for the results and provides the results to the physician. This is a classic example of how the two actors work closely as mentioned above.

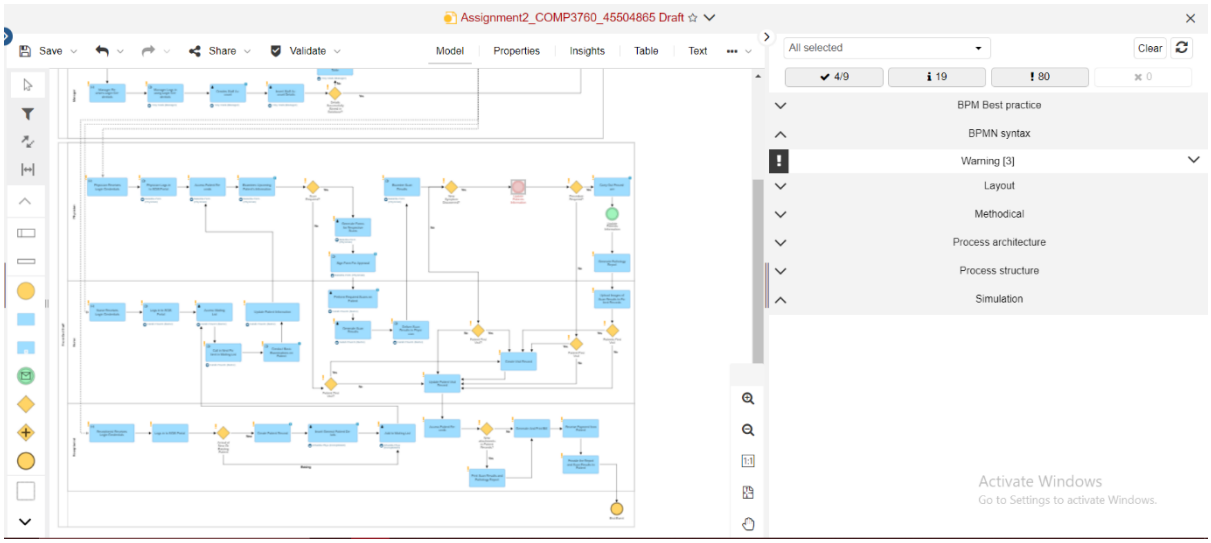
SIMULATION RESULTS IMAGE:

Name ↑	Execution time	Waiting time	Resting time	Transport time	Cycle time	Non-personnel costs	Personnel costs	Total costs
Assignment2_COMP3760_45504865 Draft	04:43:05	00:06:02	00:00:00	00:00:00	03:51:05	0.00	555.13	555.13



The simulation is run on a ‘per process’ basis and the results are according to the defined task properties. The actors’ hourly wages is inputted and hence the personnel costs’ domination in the costs pie graph.

VALIDATION RESULTS IMAGE:



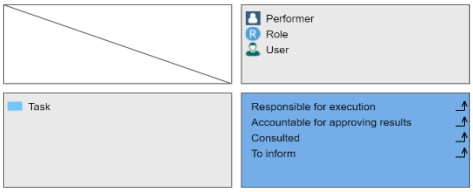
The model adhered to all the syntax laws and BPMN design regulations which resulted in zero errors from the validation analysis.

REPORT IMAGES:

Matrix Report:

Matrix view: Process activities responsibilities (RACI)

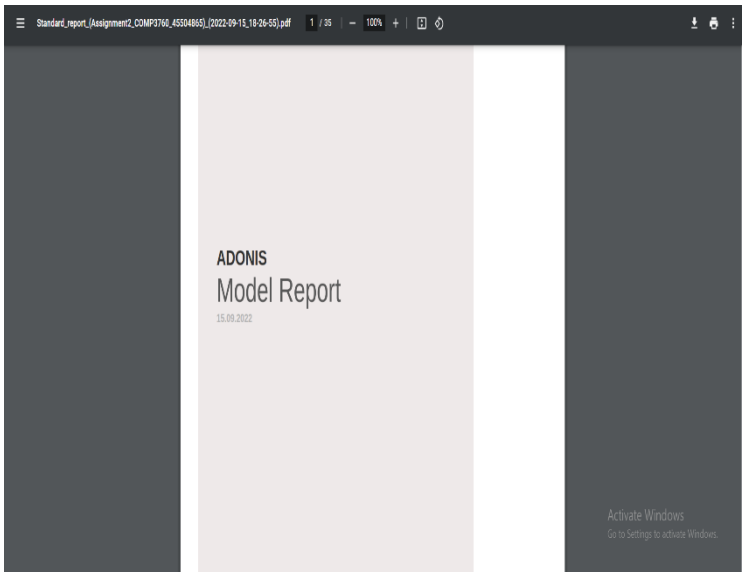
Legend:



Assignment2_COMP3760_45504865

	Amanda Phyu (Receptionist)	Elon Tusk (Administrator)	Luke Walker (Patient)	Natasha Piers (Physician)	Sarah Powers (Nurse)	Tony Stark (Manager)
Access Patient Records				R		
Access Waiting List					R	
Add to Waiting List	R					
Admin Sends Login Credentials to Manager		R A				I
Admin Sends Login Credentials to Staffs		R A				
Adminstrator Logs in		R				
Call in Next Patient in Waiting List			C		R	
Creates Center Information		R				
Creates Managers Information		R A				
Creates Staff Account		I				R A
Deliver Scan Results to Physician					R	
Examine Scan Results				R		
Examines Upcoming Patient's Information				R		
Generate Forms for Respective Scans				R	I	
Generate Scan Results				A	R	
Insert General Patient Details	R		C			A
Insert Staff Account Details		I				R
Inserts Centers Details		R A				
Inserts Managers Details		R A				
Logs in to SCIS Portal					R	
Manager Logs in using Login Credentials						R
Perform Required Scans on Patient			C	A C I	R	
Physician Logs in to SCIS Portal				R		
Resolve Errors in Staff Account Table		A C I				R A
Resolve Errors in the Relational Data Model		R A				
Sign Form For Approval			C	R		
Update Patient Information			C	A I		
Update Tables and Check		R				

Model Report



Creates Staff Account (Task)

Creates New Staff Account Table in the Database

GENERAL INFORMATION

Task type	User
Classification	semi-automatic

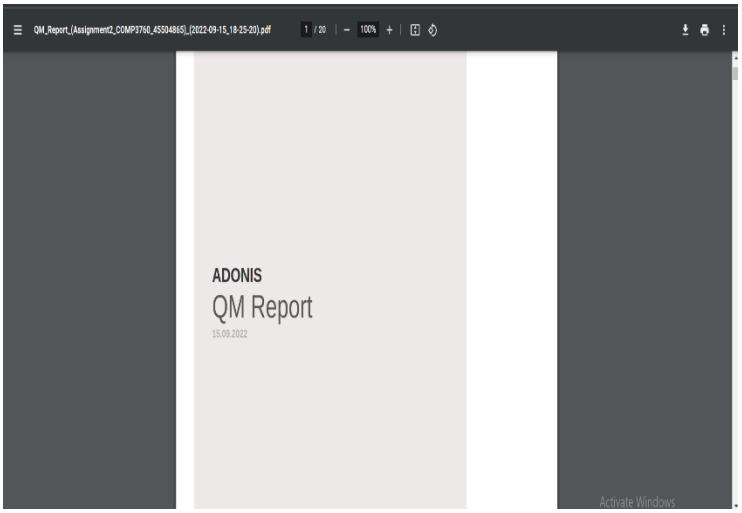
RACI

Responsible for execution	Tony Stark (Manager)
Accountable for approving results	Tony Stark (Manager)
To inform	Elon Tusk (Administrator)

SIMULATION DATA

Execution time	0:000:00:05:00
Waiting time	0:000:00:02:00

QM Report:



(-) Admin Sends Login Credentials to Manager

(Task)

GENERAL INFORMATION

Description	Admin sends created login credentials to respective Centers' Managers through Mail
Task type	Send
Classification	communicating

RACI

Responsible for execution	Elon Tusk (Administrator)
Accountable for approving results	Elon Tusk (Administrator)
To inform	Tony Stark (Manager)

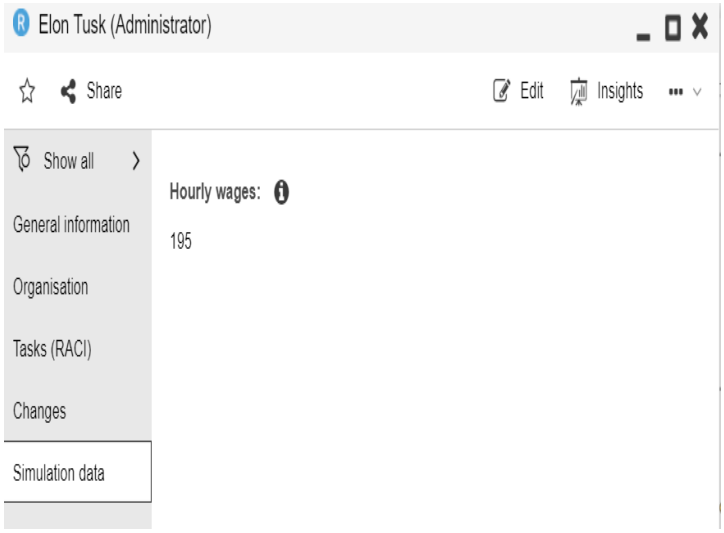
SYSTEMS/PRODUCTS

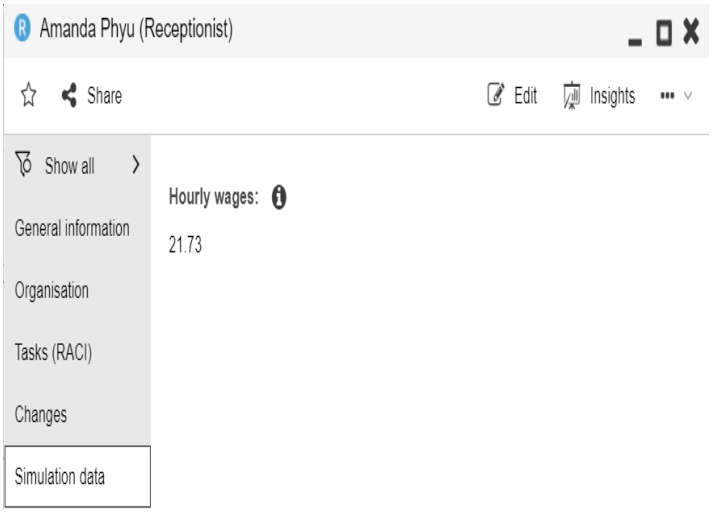
Technical resources	GMail

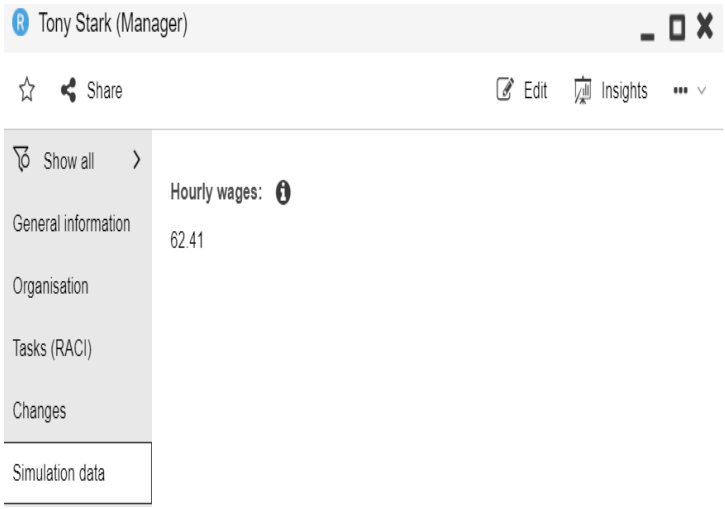
Relation "Sequence flow" to Manager Receives Login Credentials (Task)

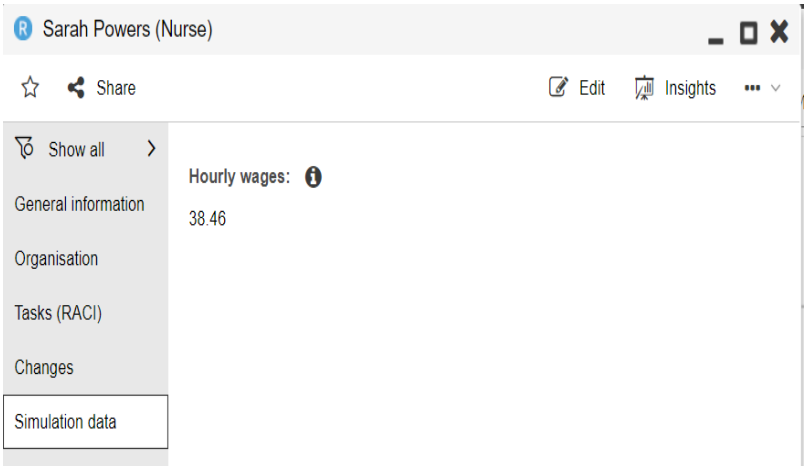
The cover images of the reports are evidences that the full report has been generated using the ADONIS application, as the total number of pages is visible. The images on the right are snippets of respective reports to display an example of the results that have been generated.

PERSONNEL COST IMAGES:









GENERAL ASSUMPTIONS:

1. There are only one instances of each actor i.e. one administrator, one manager, one physician, one nurse and one receptionist.
2. A hierarchical order is assumed between types of diagnosis. Scanning is done first, then based on the results the physician concludes whether new symptoms have occurred or not and finally based on the type of symptoms, the physician decides whether any procedure is required.
3. All actors are paid on the basis of the national average wage per hour according to their respective designation and profession.
4. The Nurses are equipped enough to perform different types of scans and generate accurate and viable results for the physicians to examine and analyse.
5. In the case where the patient requires a procedure to be performed upon them, the procedure is carried out by the physician immediately before moving on to the next patient.

REASONING:

1. One instance of each actor makes the business model building simpler as two actors of the same role have the same tasks and flow of tasks to follow.
2. Although with regards to skin cancer, the symptoms might be visible, a scan is usually taken to confirm any suspicions. Hence the model is constructed on the basis of this assumption to reduce complexity and make the model more time-efficient.
3. This is assumed to calculate the personnel costs of the model in the most unbiased manner possible.
4. Nurses in general hold a very unique skill set and are well versed with common medical practices, scans and reports. This notion was inculcated into this model to provide more tasks for nurses rather than physicians as it is common to generally have more nurses than physicians in any medical centers. Therefore, by assigning more tasks to nurses rather than physicians, the whole model becomes more cost and time efficient.
5. It is quite clear that in the real-world scenario, immediate procedure executions are performed seldom. The usual scenario is the physicians will often provide a range of dates to the patient for the execution of the procedure and the patient chooses the most convenient one. But in this model, the opposite is assumed to reduce complexity and that if the physicians do arrange a date for the procedure, it won’t change the flow of the model.

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