SOFTWARE ENGINEERING[I]

PROJECT: EMERGENCY SECURITY SYSTEM(ESS)

Group: 5

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Project Proposal

An **Emergency Security Service** Application. It allows clients to get instant emergency security services. Security is really a serious issue nowadays. There is hardly any kind of emergency Security services if you need any kind of help immediately. There are many types of crimes happening. Such as Robbing, Stealing, Rape, Harassments. So, this software can serve an instant action by clicking a simple button. Sometimes victims cannot get enough time to seek help. This Security service will help us to connect the victim to the nearest Police Stations. Depending on the circumstances this software will turn on the audio or camera and will capture crime details along with the location of the victim. The use of instant audio or video capture is it can also help the nearest security service to help understand what is going on in the location and they can send help accordingly. Sometimes it is not possible for the victim to send all the details manually so the instant emergency option will help the victim to reach the nearest security options with just one click. This will send the location and details to the nearest security service/. It is reliable for identifying criminals and stopping crimes. As this software is for emergency services it can also help old citizens to get help if they need it. Same as the Emergency calls for security this software can also be used as regular emergency calls for the old citizens. Obviously, before installing or setting up the software on your device you have to allow it to access your location details, media, and data. As this software will have the instant helpline option so if needed this software will automatically turn on all the important device options that should be turned on so that there is no problem communicating or reaching Security on time. The relevant benefits of the project are many in the current context. Crime is increasing day by day. But anyone who uses our app can get help right away. And also it has a lot of market targets and clear objectives.

Functional Requirement

1. In the system first, a login screen allows registered users to log in to the site to access all of the features that their account gives them access to. If they type in their username and password and click submit the user's credentials are validated and if correct they are logged in. If they are incorrect they get an error message.
2. If the user has forgotten their password they click "Forgot Password?" which takes them to a password recovery screen. If the user does not have an account then they click the register button and be taken to the registration screen.
3. In the registration screen, a new user types in all of their information and clicks submit, the data is then validated to make sure there is not an existing user with those credentials. If there is an existing user then the user is asked to enter a new username.
4. The user of the application should be asked to log in only the first time he uses the application on his device. The user must see the main page of the app (with the buttons to send notifications) every other time he opens the app.
5. Rearranging the information depending on users.
6. Software connection with GPS System, that can automatically locate user location.
7. A Secure Network connection will connect safely immediately with local police, security service, three authenticated users.
8. An option must be provided to enable/disable these buttons to avoid pressing them by accident.
9. Providing the spreadsheet for summary reports and activity schedules.
10. Only registered users are allowed to input, edit, or view the activity time schedule.
11. Software always secures the user's Personal Information.
12. A flexible and portable application that can be accessed from anywhere in every situation.
13. Medical teams and emergency life support are connected and contact frequently with clients.
14. A Real-Time Automated Database Management System is Always connected with The Application.
15. The user shall be able to set the contacts to send text messages and email from within the application. The user must also be able to set the contents of the messages. Also, the user may select these contacts from the contact book or enter them manually.
16. The user shall be able to start/stop location tracking. They must also be able to see their location history from within the application.
17. There is always a two-step authorization service to make any changes in the app.
18. A lightweight system that doesn't affect the user's device battery heavily.
19. Users can contact connected networks without Data Connection.
20. Simple login system, that can be done within a second, if the user logged out previously.
21. In the App, there will be two base colors, which is #ff9237 and #ff9237.
22. A Responsive Dropdown Menu On the Upper Corner.
23. User Avatar and Username are there in the dropdown menu.
24. Subscription name in the menu.
25. There are settings options to change user Information.
26. Recently using the app history of the user, that automatically saved in the database and displayed on the app interface.

27. A Button at the center connects users with the network and sends an emergency notification to the connections.
28. A Secondary Phone notification, home, and lock screen button that use the same functionality as the app button.
29. A Sending button that allows the user to send pictures, videos, and audios.
30. User Confirmation to exit from the app.
31. A two-step authorization facility is provided with the app
32. Warning and notification sound is provided.
33. We will create this application with Java programming. Because Java is independent.
34. Java programming runs on any operating system but if we do C/C++ it will not run on many operating systems.
35. We can easily create any app for mobile with Java programming. Because we have many options.
36. Java is faster than any programming language. Because Java is a compiled language and that will help us work faster.
37. The application we will build is for java programming. so that we can create simple codes for mobile applications easily.
38. Java is object-oriented programming that creates object, class, inheritance, polymorphism, and encapsulation.
39. Java is very simple to use language because this is based on C++
40. The simplicity of Java in the removal of the expense of programming like pointers operator overloading which is confusing and rarely used. So Java doesn't have pointers which makes it simple to use a programming language.
41. Java is very secure. The first reason is that Java doesn't have pointers; you can't access your system memory directly. Security is a Java program that runs on a Java virtual machine or inside a virtual machine sandbox. if there is any problem in the java program then the problem will remain inside the virtual machine only it will not affect your operating system.
42. Java architecture neutral because there is no implementation of dependent features that is an example of the size of primitive type.
43. Java is a portable one that we can easily operate in bytecode through any OS. That's why we are using it to create our application

Non-Functional Requirement

1. The system must be usable.
2. Providing a simple and elegant UI for the main screen. This is necessary as the user would usually come on to this screen in case of a panic or emergency and hence each button should be clearly visible and easily pressed.
3. Providing a tab-based view to display the different settings for the application and location history for the user.
4. Enabling swipe gestures for the tabbed view.
5. Displaying user-friendly dialogs for picking the date, time, entering the contacts to send text and email messages to, and to enter the contents of the text and email messages.
6. Auto-update for all related data.
7. Memory allocation shall be below.
8. The software can be installed on all necessary platforms and the platform on which it is expected to run.
9. The required languages and locales the application must support.
10. Provided fast rearrange information.

11. The processing of each request should be done within 3 seconds.
12. Passwords shall be viewable or non-viewable at the point of entry or at any other time depending on the user’s choosing options.
13. Users shall receive notification of profile information changes via the preferred communication method of record when profile information is modified.
14. The system shall assure that users given data are safe from unauthorized access.
15. The server should be secured from dependency injection.
16. The system should be 99% high availability.
17. Provided local storage access.
18. The app shouldn't be laggy and slow.
19. The two-step authorization service should be fast and reliable.
20. UX should be easy and comfortable for users of all ages.
21. The image and video quality should be maximum.
22. Network service should be enabled 24/7.
23. Backup and Recovery of History of uses shall be done using users’ provided email or number.
24. The app should be fewer resources hungry.
25. Power consumption using the application shall be minimal.
26. The app should have support in almost every version of android and ios.
27. The app should not conflict with other applications.
28. Launching the app should be within 1 second.
29. the server should be able to take a load of at least 10 thousand users each day.
30. The time of servers and other devices shall be synchronized to a reliable reference time.
31. The subscription payment system should be secured and reliable.
32. The user should get the subscription notification right after completing the payment.
33. Testing and automation should be done within 10 days.
34. Describing legal requirements that can arise from outside the client’s own organization.

User Interfaces:

Admin Class Functionality:
- Can log in.
- Can manipulate user (add,delete,update,ban)
- Can manage databases.
- Can view and search all types of users.
- Can maintain software

Police Class Functionality:
- Can report the user for wrong/mistake alert
- Can report the user for wrong/mistake alert
- Can contact the user

Medical Class Functionality:
- Can check the location of victims
- Can report the user for wrong/mistake alert
- Can contact the user
- can emergency medical services.
- can provide on-demand medicines
- Can the user send information to inform his/her family member?

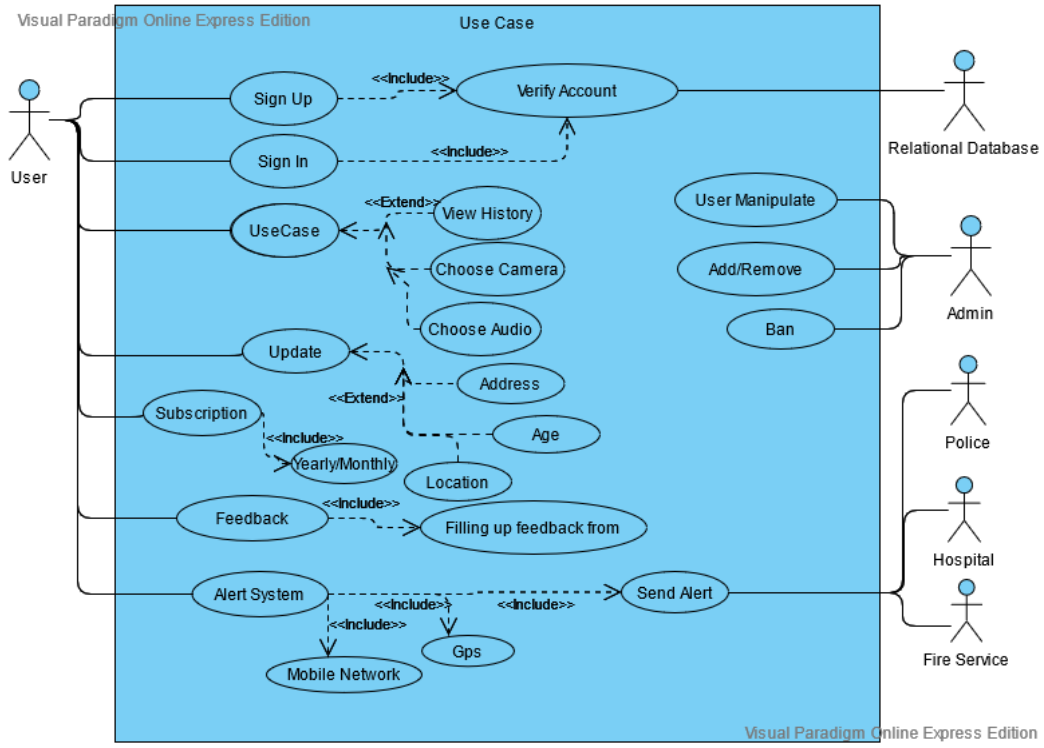
Fire Class Functionality:
- Can check the location of victims
- Can report a user for wrong/mistake alert
- Can contact the user

User Class Functionality:
- Can login/sign up (update)
- Can modify personal information.
- Can manage schedules.
- Can view and search maps and nearly police stations.

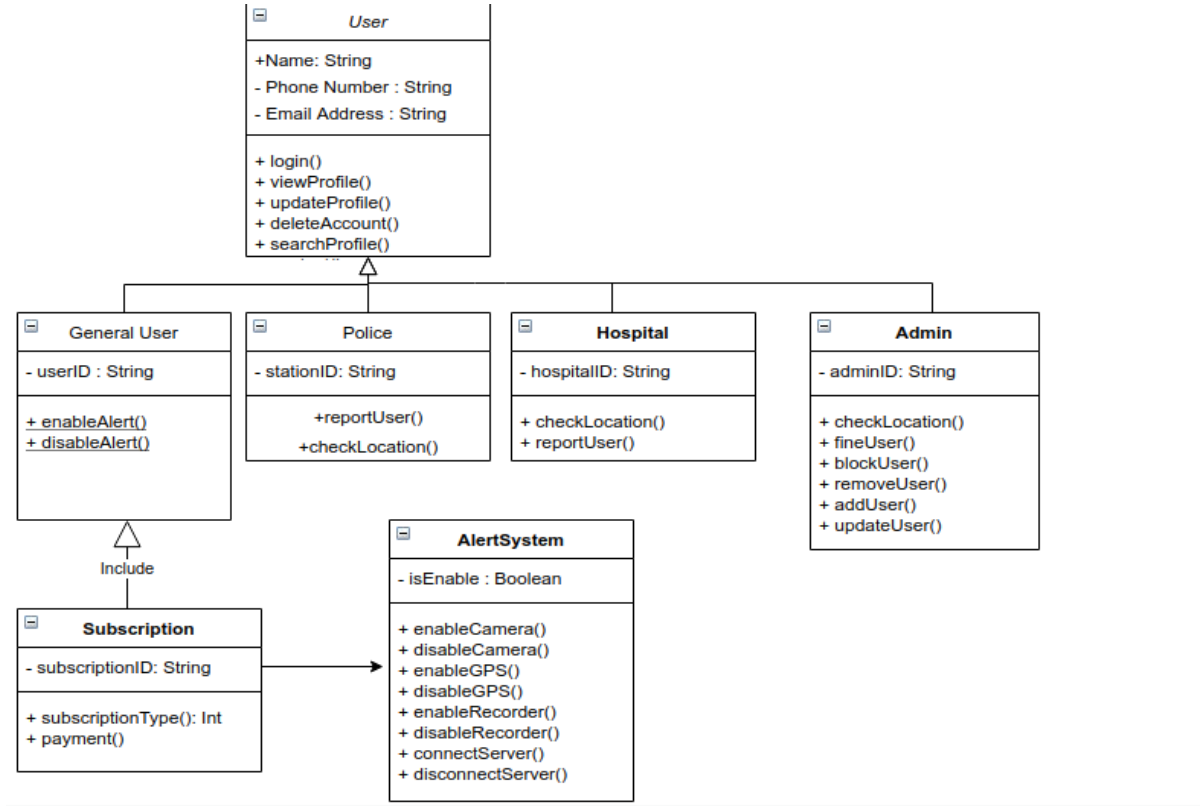
Operating Environment:
- Minimum network support should be GPRS.
- The Android SDK version should be 18.
- The CPU should be at least dual-core 1.2 GHz.
- The minimum android version should be android KitKat 4.2 & IOS version 6.
- RAM should be a minimum of 512 Mb.

DIAGRAM FOR SOFTWARE

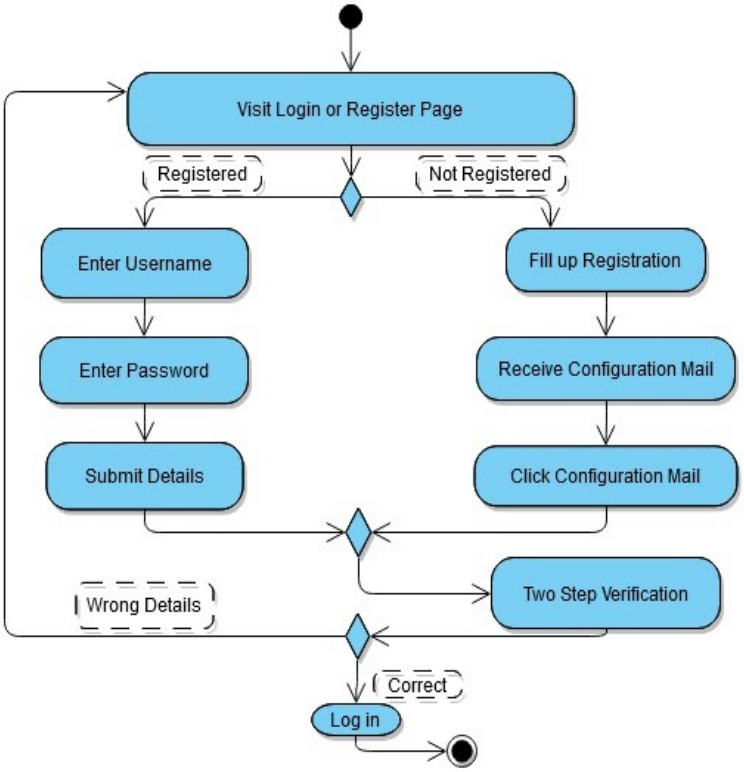
Use-Case Diagram



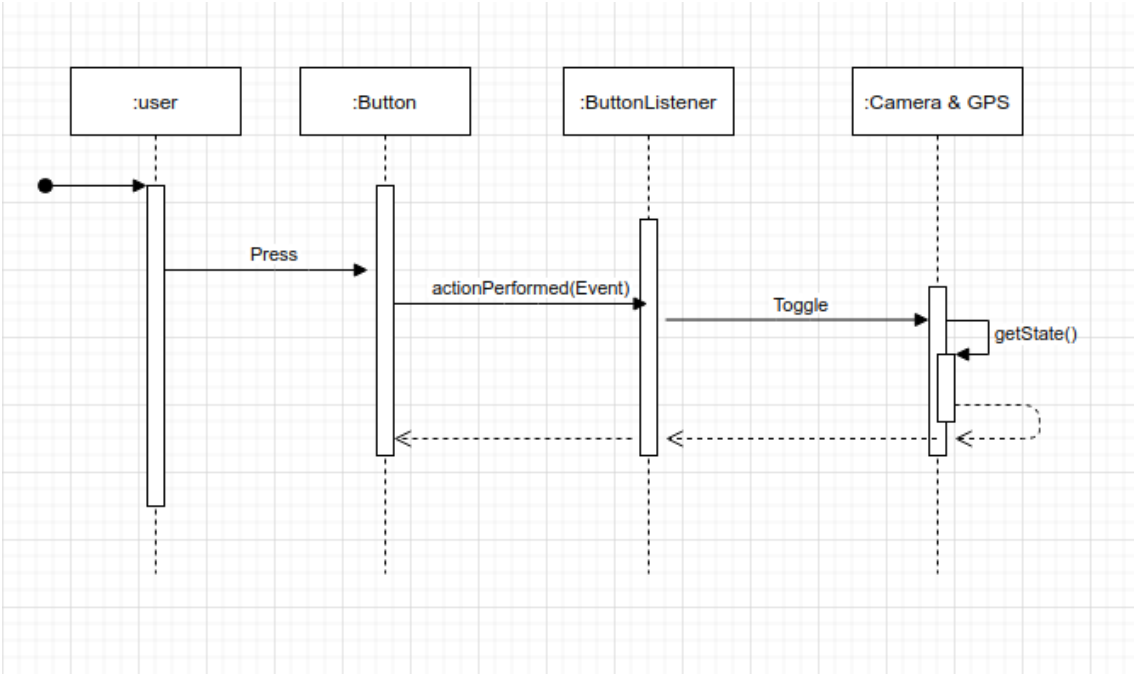
Class Diagram



Activity Diagram



Sequence Diagram



For our system, we would use the Scrum development model.

Scrum is an agile framework. Scrum is a framework that helps teams work together. Scrum describes a set of meetings, tools, and roles that work in concert to help teams structure and manage their work. Scrum prioritizes delivering incremental business value to the customer. It is more flexible in requirements gathering and it let's start the development phase earlier.

Scrum does provide a strong framework for organizing product teams and scheduling work. With Agile Scrum meetings, teams can sit down to assess what worked and what didn't and plan further on how they can tailor their workflow accordingly. It's an Agile framework that can be molded to accommodate the needs of a team versus dictating exactly how a team must proceed.
In our project, we developed our software in an incremental way. So Scrum would be suitable for our group project because Scrum reduces the risk of building the product by increments.
Once the product backlog has been defined, the duration of the iterations is chosen (between 1 and 4 weeks) according to the requirements' complexity, the customer's needs, and the development team's capacity. One of the basic goals of the agile scrum roles is keeping the entire scrum team on the same page throughout the lifespan of the project. Scrum has three roles: product owner, scrum master, and the development team members.

Project Role :

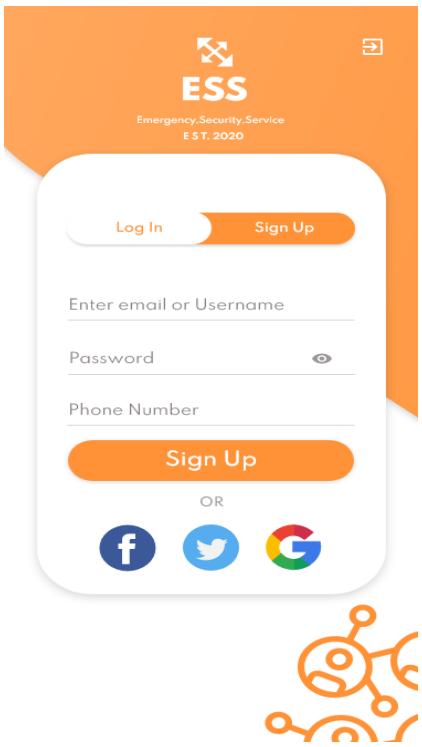
Every scrum team must have a Product Owner and Scrum Master. The other members of the Scrum team are a scrum development team and stakeholders. The team must strive to perform the Scrum team roles and members must be alive to their responsibilities in the project.

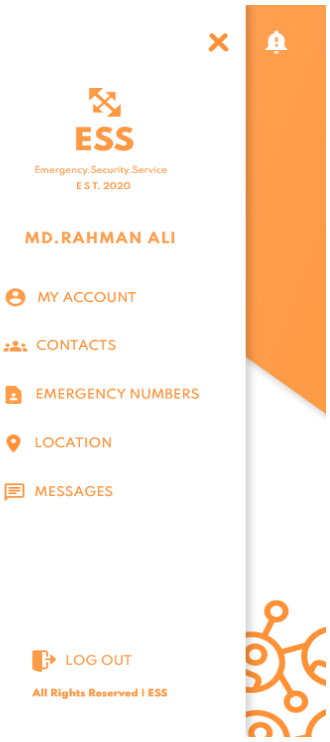
- An agile Scrum Master is responsible for facilitating the activities of the agile development team. He is responsible for the management of the exchange of information between members. An agile Scrum Master practices the Scrum methodology that aids the team to attain self-organization and make changes rapidly based on agile principles. Scrum Master interacts with the project team as well as with the customer and the management during the project. One of the scrum roles expected from a Scrum Master is that he should motivate the development team and the Product Owner to achieve optimum performance. another scrum role of a Scrum Master is the proper management of the project scope and timeline to enhance the efficiency of the team. He ensures that the team embraces effective communication with the use of the right channel that protects them from third-party interference. He should be anticipatory in dealing with any challenge that could arise in the project. Again, he should identify, track, and remove any impediments that could pose a threat to the project.

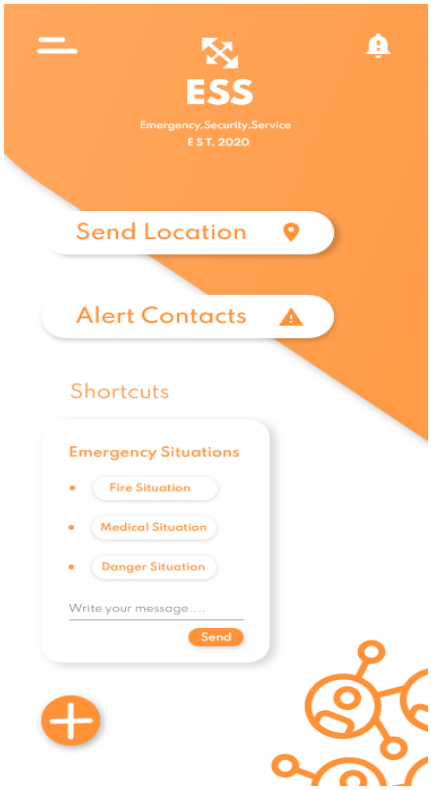
- As a Product Owner, a Scrum project manager grooms and refines the product backlog. He is selected by the Scrum Master, the customer, and the management He makes the final decisions of the tasks related to Product Backlog. He communicates frequently with the relevant stakeholders. He helps in facilitating a conversation with stakeholders in the direction of the product backlog during the sprint review meeting. Also, he is responsible for sharing and maintaining the budget of the project.

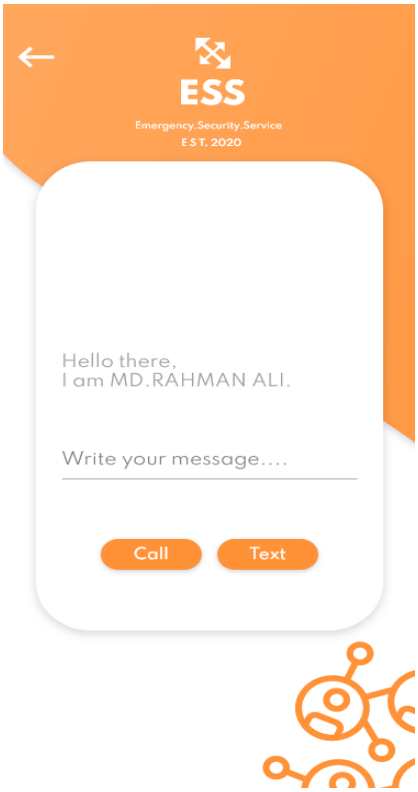
- The scrum team is the project team that has the authority to decide on the necessary actions and to organize itself in order to achieve the goals of each Sprint. A Scrum team is basically made up of a collection of individuals. The Agile team size consists typically of between five to nine members who work together towards meeting and achieving a specified product. Individual Development Team members may have specialized skills and areas of focus, but accountability belongs to the Development Team as a whole.
  It is often better than scrum team members work from the same location whenever possible. This will help the team to better manage tasks and responsibilities regarding the completion and delivery of the project.

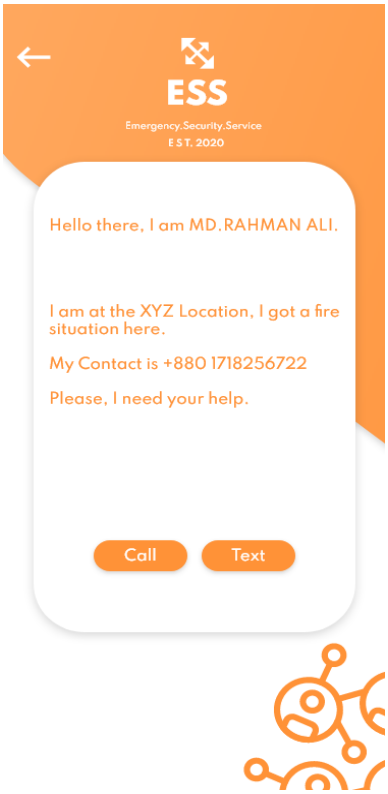
PROTOTYPE DESIGN











ESS

Emergency.Security.Service

E S T. 2020

Hello there, I am MD.RAHMAN ALI.

I am at the XYZ Location, I got a Medical situation here.

My Contact is +880 1718256722

Please, I need your help.

Call Text

ESS

Emergency.Security.Service

E S T. 2020

Hello there, I am MD.RAHMAN ALI.

I am at the XYZ Location, I am in a Danger situation here.

My Contact is +880 1718256722

Please, I need your help.

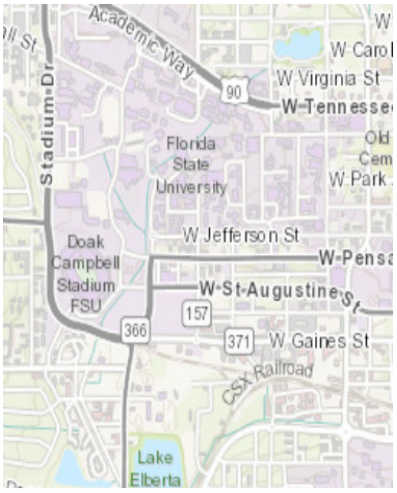
Call Text

ESS

Emergency.Security.Service

E S T. 2020

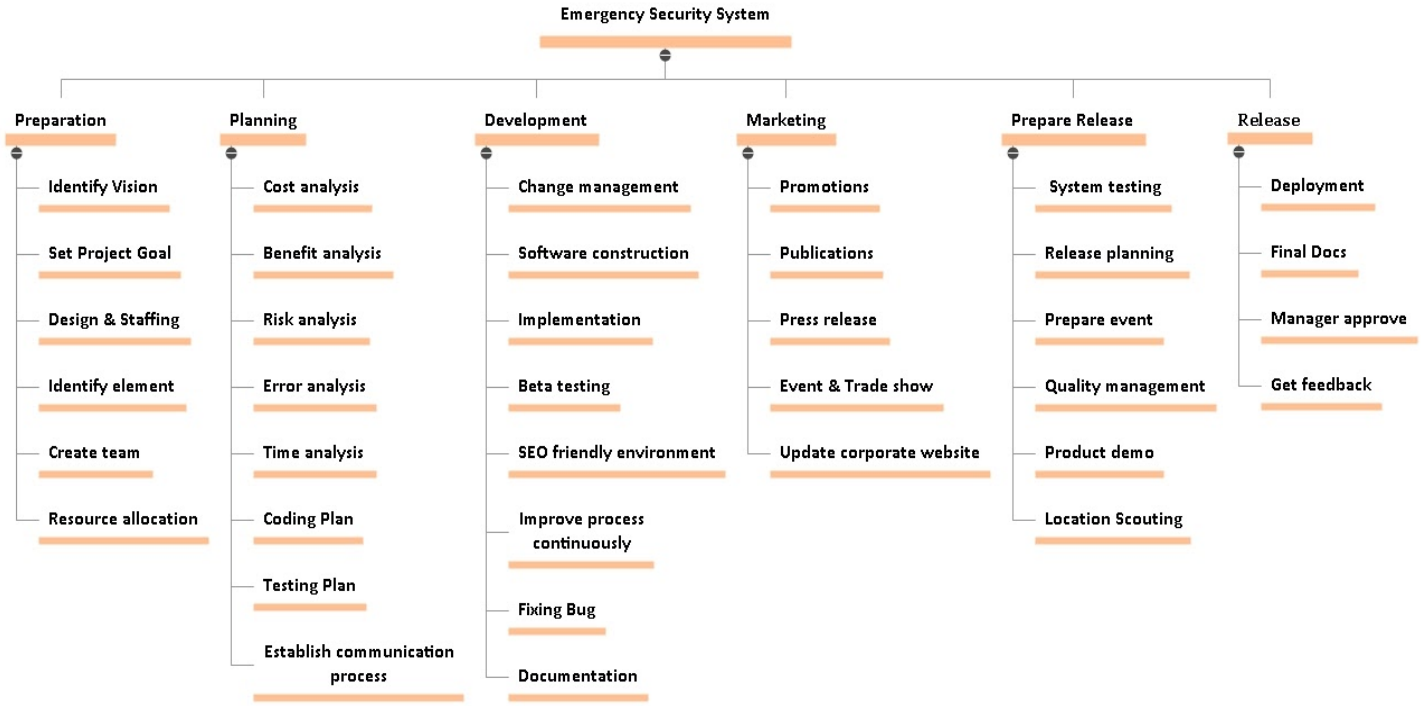
Your Location



Send to All

Select Contact

Work Breakdown Structure(WBS)



CONSTRUCTIVE COST MODEL

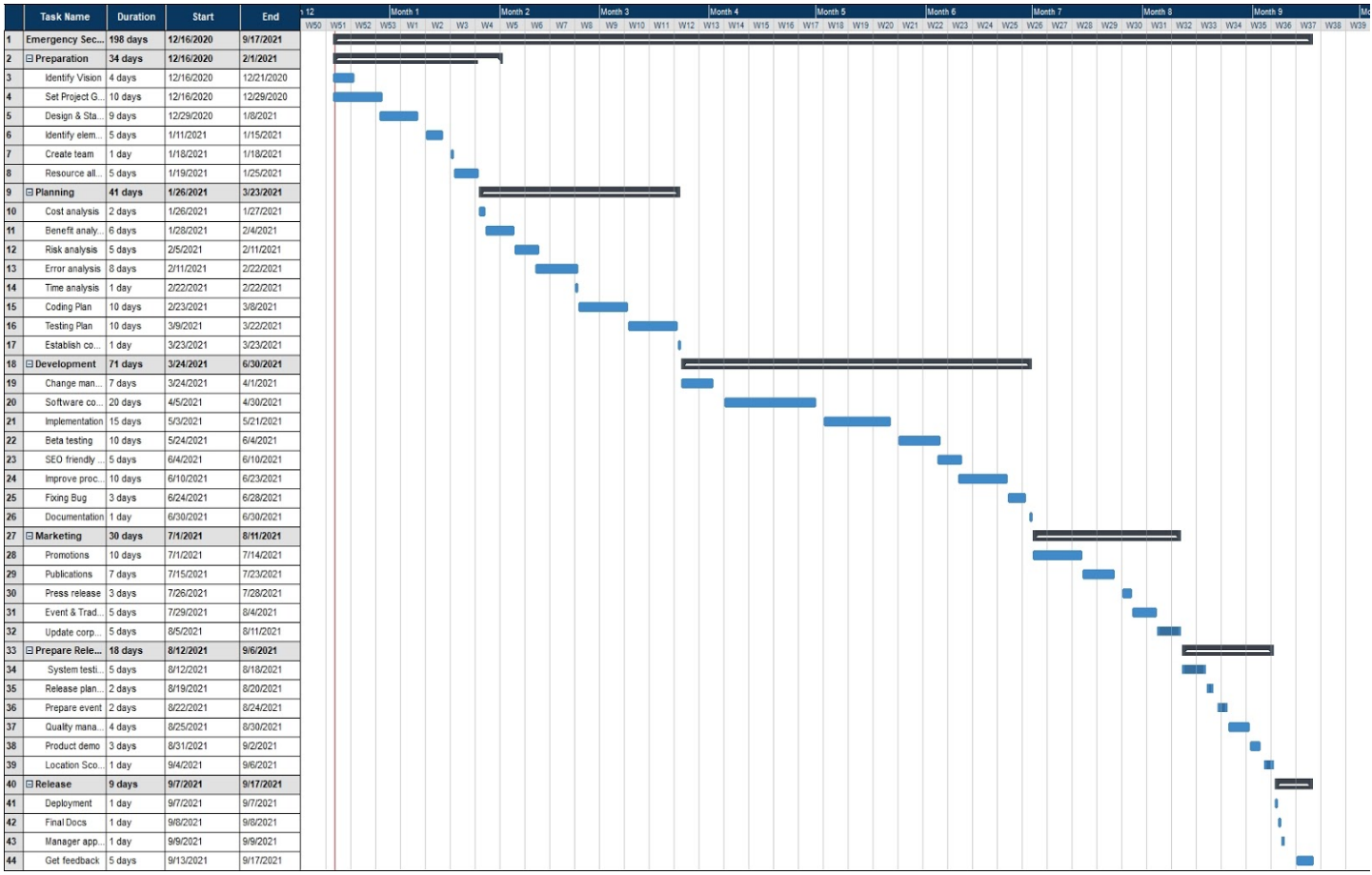
Effort=PM=Coefficient<Effort Factor>*(SLOC/1000) ^P
=2.4*(12000/1000) ^1.05
=32.610=33

Development time = DM = 2.50*(PM)^T
= 2.50*(32.61) ^0.38
=9.398=9

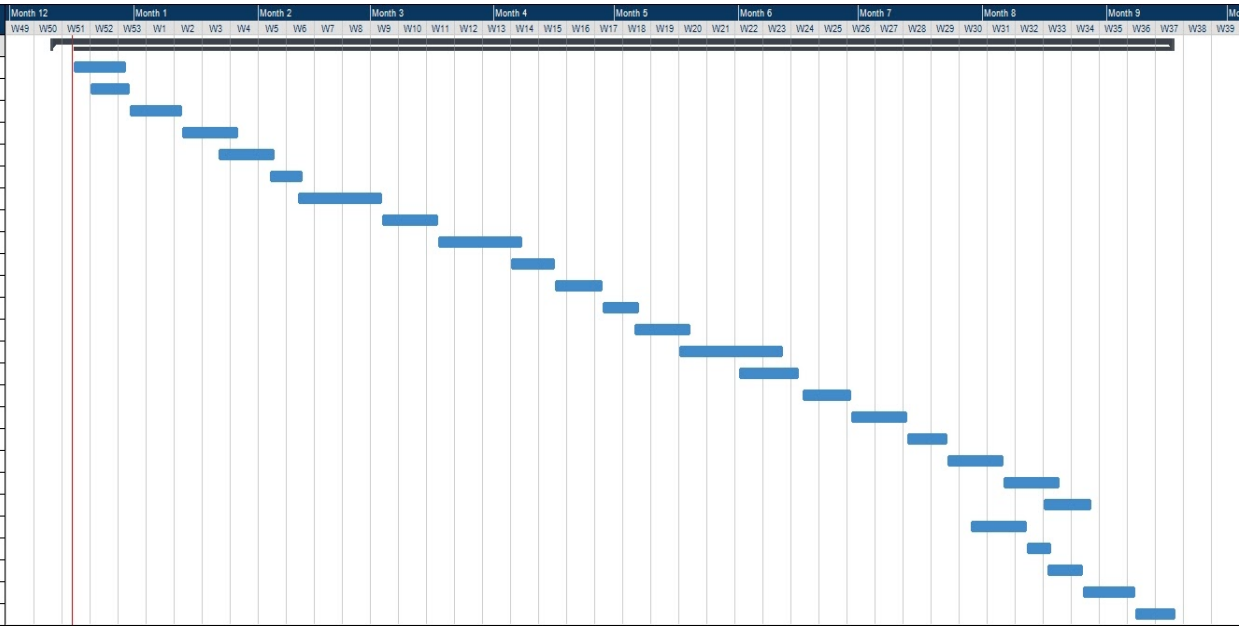
Required number of people = ST = PM/DM=32.61/9.39
=3.470=3

TIMELINE & SCHEDULING

	Task Name	Duration	Start	End
1	**Emergency Sec...**	**198 days**	**12/16/2020**	**9/17/2021**
2	**⊟ Preparation**	**34 days**	**12/16/2020**	**2/1/2021**
3	Identify Vision	4 days	12/16/2020	12/21/2020
4	Set Project G...	10 days	12/16/2020	12/29/2020
5	Design & Sta...	9 days	12/29/2020	1/8/2021
6	Identify elem...	5 days	1/11/2021	1/15/2021
7	Create team	1 day	1/18/2021	1/18/2021
8	Resource all...	5 days	1/19/2021	1/25/2021
9	**⊟ Planning**	**41 days**	**1/26/2021**	**3/23/2021**
10	Cost analysis	2 days	1/26/2021	1/27/2021
11	Benefit analy...	6 days	1/28/2021	2/4/2021
12	Risk analysis	5 days	2/5/2021	2/11/2021
13	Error analysis	8 days	2/11/2021	2/22/2021
14	Time analysis	1 day	2/22/2021	2/22/2021
15	Coding Plan	10 days	2/23/2021	3/8/2021
16	Testing Plan	10 days	3/9/2021	3/22/2021
17	Establish co...	1 day	3/23/2021	3/23/2021
18	**⊟ Development**	**71 days**	**3/24/2021**	**6/30/2021**
19	Change man...	7 days	3/24/2021	4/1/2021
20	Software co...	20 days	4/5/2021	4/30/2021
21	Implementation	15 days	5/3/2021	5/21/2021
22	Beta testing	10 days	5/24/2021	6/4/2021
23	SEO friendly ...	5 days	6/4/2021	6/10/2021
24	Improve proc...	10 days	6/10/2021	6/23/2021
25	Fixing Bug	3 days	6/24/2021	6/28/2021
26	Documentation	1 day	6/30/2021	6/30/2021
27	**⊟ Marketing**	**30 days**	**7/1/2021**	**8/11/2021**
28	Promotions	10 days	7/1/2021	7/14/2021
29	Publications	7 days	7/15/2021	7/23/2021
30	Press release	3 days	7/26/2021	7/28/2021
31	Event & Trad...	5 days	7/29/2021	8/4/2021
32	Update corp...	5 days	8/5/2021	8/11/2021
33	**⊟ Prepare Rele...**	**18 days**	**8/12/2021**	**9/6/2021**
34	System testi...	5 days	8/12/2021	8/18/2021
35	Release plan...	2 days	8/19/2021	8/20/2021
36	Prepare event	2 days	8/22/2021	8/24/2021
37	Quality mana...	4 days	8/25/2021	8/30/2021
38	Product demo	3 days	8/31/2021	9/2/2021
39	Location Sco...	1 day	9/4/2021	9/6/2021
40	**⊟ Release**	**9 days**	**9/7/2021**	**9/17/2021**
41	Deployment	1 day	9/7/2021	9/7/2021
42	Final Docs	1 day	9/8/2021	9/8/2021
43	Manager app...	1 day	9/9/2021	9/9/2021
44	Get feedback	5 days	9/13/2021	9/17/2021



	Task Name
1	**Emergency Security Service**
2	1.Feekra Baset Baishakhi
3	2.Md. Nafisur Rahman
4	3.Joy Karmokar
5	4.Shahrier Hossain
6	5. Feekra Baset Baishakhi
7	6. Feekra Baset Baishakhi
8	7.Joy Karmokar
9	8.Shahrier Hossain
10	9.Md.Nafisur Rahman
11	10.Shahrier Hossain
12	11.Joy Karmokar
13	12.Shahrier Hossain
14	13.Joy Karmokar
15	14.Md.Nafisur Rahman
16	15.Joy Karmokar
17	16.Shahrier Hossain
18	17. Feekra Baset Baishakhi
19	18.Joy Karmokar
20	19. Feekra Baset Baishakhi
21	20.Md. Nafisur Rahman
22	21.Shahrier Hossain
23	22.Md. Nafisur Rahman
24	23. Feekra Baset Baishakhi
25	24.Joy Karmokar
26	25.Md. Nafisur Rahman
27	26.Shahrier Hossain



Earned value analysis(EVA)

Task	Planned effort	Actual effort
1	4	4.5
2	10	9
3	9	9
4	5	6
5	1	2
6	5	-
7	2	-
8	6	-
9	5	-

BCWP=29.0

BCWS= 47.0

ACWP = 30.5

Task taken= 9

BAC= 198.0

SPI= BCWP/BCWS = 29.0/47.0 = 0.617021

SV = BCWP-BCWS= 17.5-29.5 = -18 person-day

CPI = BCWP/ACWP = 29.0/30.5 = 0.95

CV= BCWP-ACWP = 17.5 - 20.5= -1.5 person-day

% schedule for completion = BCWS/BAC = 47.0/198.0 = 23.74%

% complete = BCWP/BAC = 29.0/198.0 = 14.64%

Risk Table

Risks	Category	Probability	Impact
Project Fails to meets its objective	PR	30%	1
activities will take longer than expected	BU	60%	2
Staff don’t work	ST	20%	3
The interface is difficult to understand for the user	CU	55%	2
The shortfall for server maintenance cost	PS	50%	3
Spamming by fake ESS alert by anonymous spammers	CU	40%	3
The sponsor will break the agreement	CU	15%	1
The Server will be down with unusual situations	PR	25%	2
The software will be hacked by anonymous hackers	DE	2%	1
Lack of budget	BU	45%	2