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CineMaster

CineMaster



Technical Report



National
College of
Ireland

Declaration Cover Sheet for Project Submission

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SECTION 2 Confirmation of Authorship

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Signature: Stephen Reilly Date: 11/05/2016

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Executive Summary

The primary objective for the creation of this app was to provide people with a simplistic platform for discovering movies. This is through a mix of details on upcoming movies that will be playing in theatres soon and details on movies that have already been released, but the user may not have seen. The app will allow people to search through a list of movies, with each film providing critic scores and audience ratings to give the user more information. This will assist the user in formulating their own opinions and will allow for a simpler decision-making process. The user will also be provided with a synopsis of each movie as well as a cast list.

The app will also provide the user with a map based on their surrounding area. This map will contain a list of nearby places which is based on the users current GPS coordinates. From here the user will be able to find the movie theatres that is closest to their current position. With the location of the theatre the user will also be able to get directions to the theatre from the app.

Finally, the app will also allow users to look up show times for any movie that is currently playing in theatres. Once the user selects a show time they will be able to book tickets through the website of the selected cinema.

I developed this application through android studio. With android studio I was able to use XML files to design the layout of the UI, and java as the programming language. The application also uses a SQL database to store user information. This database was connected through the use of PHP files. Android studio provided a virtual emulator which as the initial way to test the functionality of the application.

1 Introduction

1.1 Background

I have always been very passionate about both movies and the theatre experience, and with the exponential growth of the smartphone market there have been numerous cinema-related applications developed. While these are impressive, in my opinion many of them are lacking some useful features. There have been many times when I have been out with my friends and each of us would want to see a different movie, so we would usually pick a movie based on how appealing the trailer was, or who we saw on the promotional material. This often proved challenging as group consensuses are difficult to come by. When I finally acquired a smartphone, one of the first applications that I downloaded was one that provided movie reviews. I found that many of the apps available were lacking highly useful features that many people would find beneficial. For example, if I was in an area that I was unfamiliar with and I wanted to find the closest cinema and directions on how to get to. This is a feature that is not available in many similar applications. Many of these apps would provide the user with only a single a review when in reality a person would like to see as many reviews for a movie as possible so that they could to gain them an overall consensus. So why not provide people with an app that will do all of this all on their smartphone.

The more I researched about the app I thought why limit the app to just reviews, I could make an app that provide the user with all of the relevant data related to the movie to allow the user to learn as much about their chosen movie as possible. The users could see the cast, read the reviews, and even let them see show times and book tickets for the cinema of their choice.

I decided that an android would be the best way to develop my application, one of the reasons for this is that the android development tools available are more affordable to developers as compared to their IOS and windows counterparts. The android operating system also has the largest market share therefore it would be easier for me to reach a larger audience. Another reason as to why I chose Android over IOS was that one of the modules in my final year is Mobile Applications and Android Development, this module provided me with a better education in the area of Android development which was a great benefit to have in developing my application.

1.2 Aims

The primary aim of my application is to develop a fully functional, easy to use and aesthetically pleasing android application. It is important that the app is attractive to the user with a unique design that is coherent and friendly to the user.

The app will retrieve movie data from the Rotten Tomatoes API, and this data will be displayed in a list view which the user will be able to choose from. The movie pages will information such as reviews, cast list and a synopsis.

A user registration and login page will be made to allow the user to create their own account. This information will be stored in an online SQL database.

The app will also provide the users with a map which will display all of the nearby cinemas. This information will be based on the users current GPS coordinates; these coordinates will be gathered from the use of a location listener. The user will also have a map that will provide them with directions to their chosen cinema.

In addition, the user will also be provided with a selection of show times from cinemas and the ability to book tickets with a selected cinema.

1.3 Technologies

This application was developed using the android studio IDE as the app development environment. Android studio offers a wide variety of supporting libraries to choose from and provides me with a comprehensive interface in which to develop my application. The android SDK provides a unique GUI to develop the UI of the application. The GUI offers an easy to use drag and drop functionality to help create application pages with buttons, views, etc.

The UI of my application was developed using android XML which is used to define the layout of the views that are displayed on an application page.

The Java programming language was used to add functionality to all of my XML pages. Java provided functionality to all of the views and events that are used in the application. Since I have a large amount of experience in using the java programming language it was a clear choice as the programming language to be used in the development of the application.

Google APIs were used to handle the development of the map functionalities in the application. The API were readily available and offered a wide amount of documentation to be used, although at times their implementation was a bit temperamental.

The Rotten Tomatoes API was used to handle the development of the movie pages. This API was crucial to the development of the app, however it also held up the development of the app due to the amount of time needed to receive an API. I did however have a backup plan with the use of the OMDB API which would provide me with many of the same features.

SQL was used to create and design the database used in my application. Having previous experience in using SQL it was a clear that this would be used in database development.

PHP files were used as the server side scripting language which was used to connect my application to a database. I had never used PHP before so it me a bit of time to research and get used to this language.

1.4 Structure

This report is structured so that in the first section the reader can get an accurate overview what the project is, the aims and the progress that has been made.

The second section details the background to the project, what the main aims of the project are, and the technologies used in the creation of the application.

The third section details the functional requirement. Here the details of the requirements are described. In this section the reader is able to see how each requirement is activated, the functions of the requirements, the dependencies associated with them and how they are completed. This section then details the data requirements, usability requirements and the environmental requirements.

The third section details the design and architecture of the system. This section explains the implementation of the system and details the design of the user interface.

The fourth section details the developments that are planned to take place in the future.

The fifth section holds the bibliography of the resources used during the development of the project.

The sixth section is the appendix. This section holds the original project proposal, requirement specification and the monthly reflective journals.

2 System

In this section, I will outline the structure of the technical report. I aim to present a detailed and comprehensive description of the requirements of my android application CineMaster. I will then describe the design and architecture of the system. I will also discuss the technologies used in the development of the application. I will detail my testing methods and provide diagrams to explain the Graphical User Interface used in the app.

2.1 Requirements

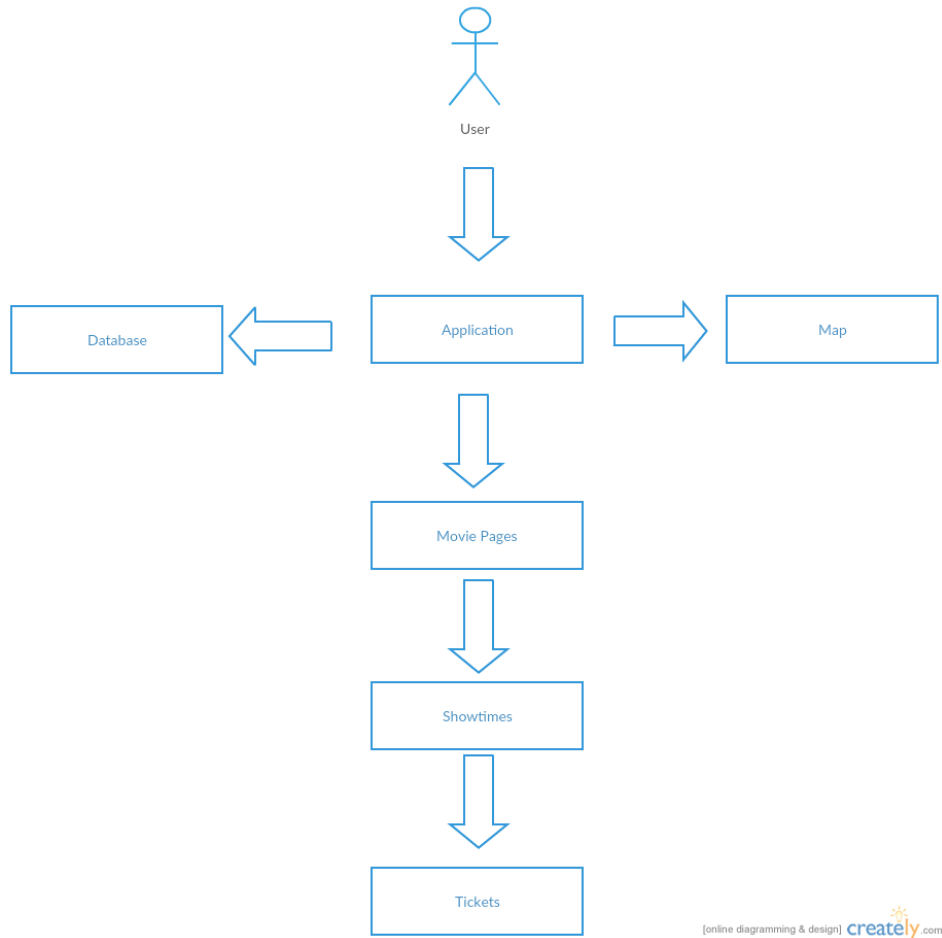
The requirements specification is the first activity performed in the software development lifecycle. To gather my requirements, I researched what features other similar applications had and what features they were missing. I also spoke to a group of people between the ages of 18 – 65. I received a vast amount of feedback from people detailing what they would like to see.

2.1.1 Functional requirements

In this section I will describe the functional requirements of the application. These requirements were created based on the feedback gained from the conversations previously mentioned. A functional requirement is a statement that describes what the system must do.

2.1.2 Use Case Diagram

This Use Case Diagram provides an overview of all functional requirements.



2.1.3 Requirement 1 <Register & Login>

This requirement details the Register functionality of the application.

2.1.3.1 Description & Priority

This requirement allows users to register an account with the application. The registration details which are a valid email address and password will be stored in the database. Once registered the user will have to enter their email address and password into the login form at the top of the page.

Use Case

Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.

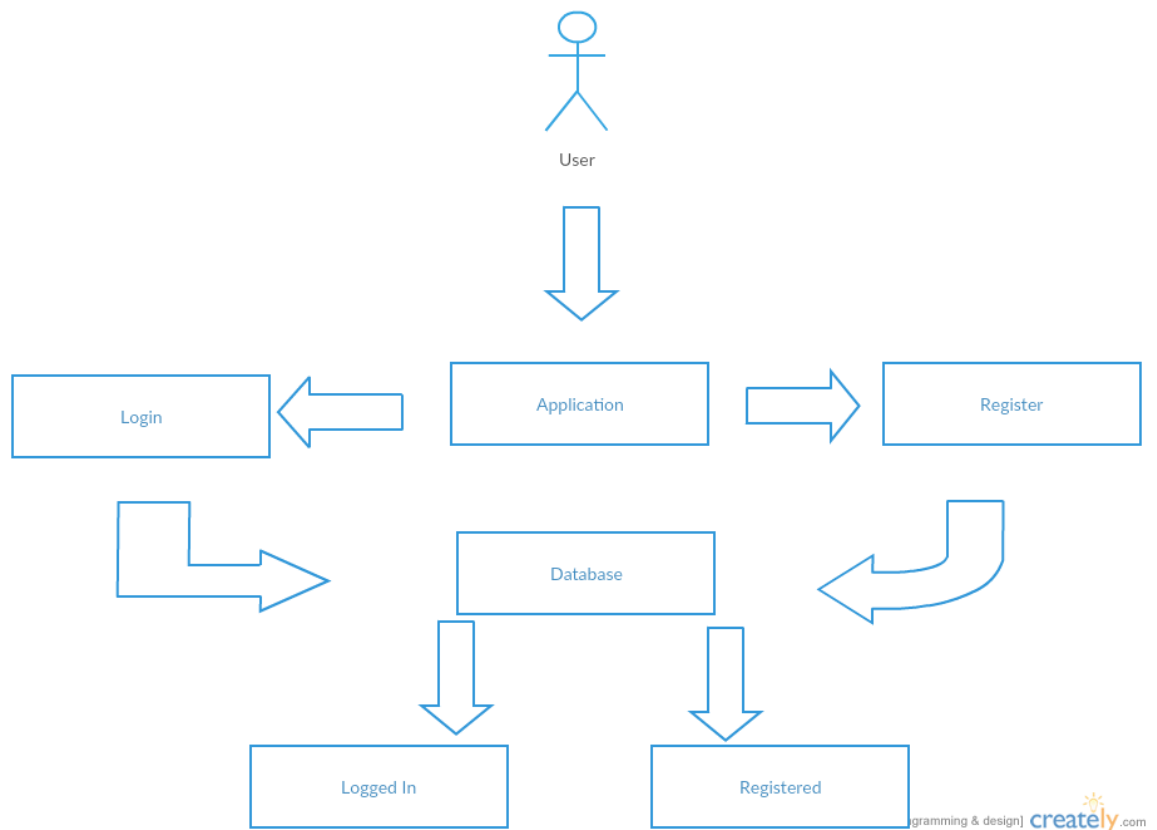
Scope

The scope of this use case is to allow users to register with the application, to allow for their registration data to be stored in the applications database.

Description

This use case describes how the users is able to register with the application.

Use Case Diagram



Flow Description

Precondition

The system is in initialisation mode

Activation

The use case starts when the user selects the login form and selects register.

Main flow

1. The user starts the application
2. The <Actor> selects the login form
3. The <Actor> selects the registration button
4. The <Actor> enters a valid email address
5. The <Actor> enters a valid password.
6. The data entered is submitted to the database.
7. An account is created for the <Actor>

Alternate flow

A1: <Already Registered>

1. The user starts the application
2. The <Actor> selects the login form
3. The <Actor> selects the registration button
4. The <Actor> enters a valid email address
5. The <Actor> enters a valid password
6. The data entered is submitted to the database.
7. An account with this information is already created in the database.
8. A dialog box is shown to the <Actor> displaying this information
9. The account is not created.

Exceptional flow

E1 : <Invalid data entered>

1. The user starts the application
 2. The <Actor> selects the login form
 3. The <Actor> selects the registration button
 4. The <Actor> enters an invalid email address
 5. The <Actor> enters an invalid password
 6. The data entered is recognised as invalid.
 7. A dialog box is shown to the <Actor> displaying this information
 8. The account is not created.

Termination

The system returns to the home page.

Post condition

The system goes into a wait state

2.1.4 Requirement 3 <Movie Search>

This requirement details the search functionality of the application.

2.1.4.1 Description & Priority

This requirement allows the user to search the application for a specific movie. Once the find the movie they are brought to the movie's specific page.

2.1.4.2 Use Case

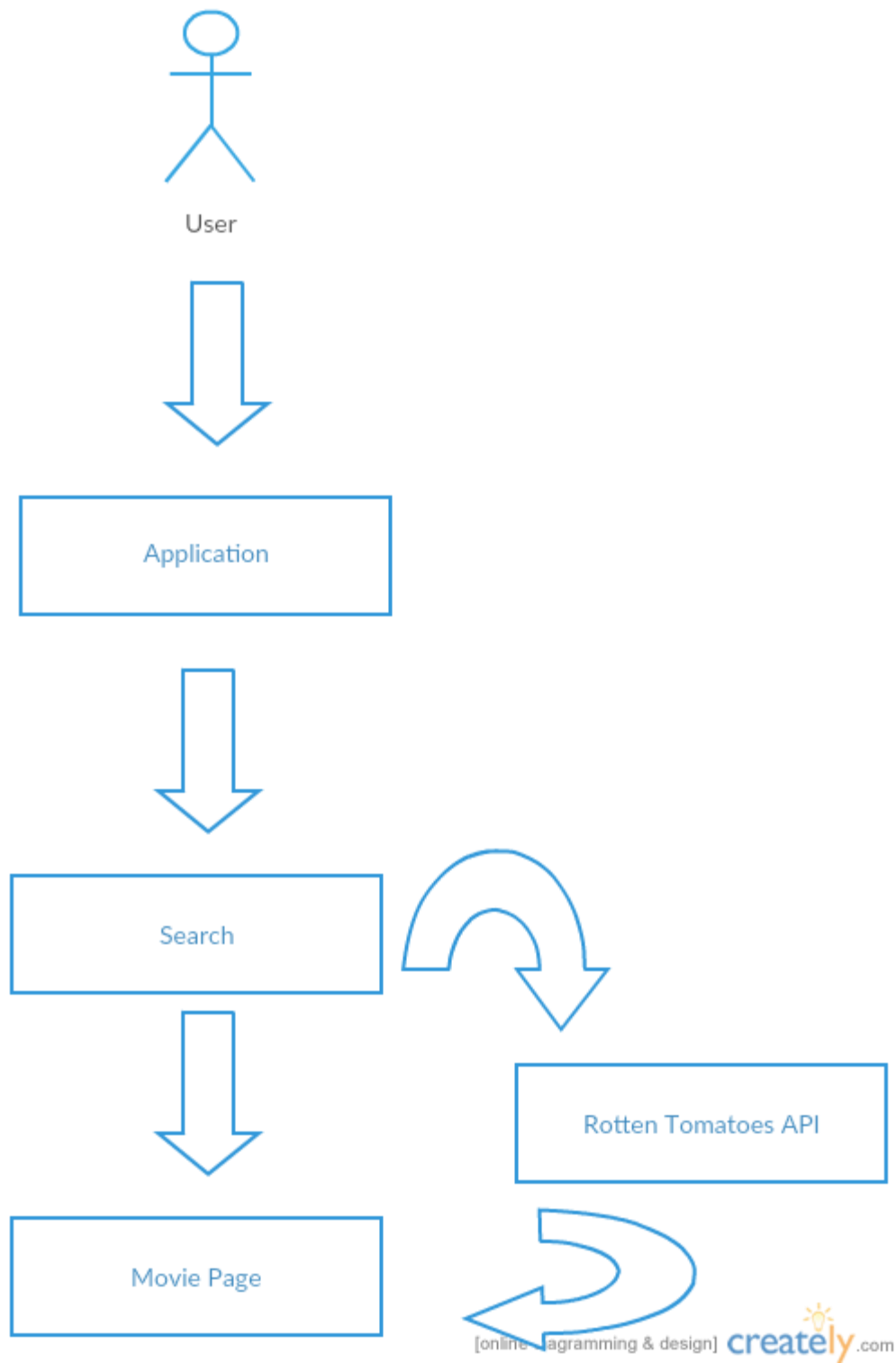
Scope

The scope of this use case is to allow users to search for and find specific movies and to be brought to the movie's page where they can see all of the information related to the movie.

Description

This use case describes how the user will be able to use the search form in the application to find specific movies. The user will be able to select the movie from a drop down list based off what the user has entered into the search bar. Once the user finds the movie that they are looking for they will select the movie page and then be brought to the page where they will be able to see the reviews, cast, etc.

Use Case Diagram



Flow Description

Precondition

The system is in initialisation mode.

Activation

This use case starts when the <Actor> enters text into the search bar form.

Main flow

1. The <Actor> enters text into the search bar
2. The system checks the database for all movies based on what was entered into the search bar.
3. The system shows the <Actor> a drop down list of movies based on what was returned from the database
4. The <Actor> Selects a Movie.
5. The <Actor> is brought to the movie page

Alternate flow

A1: <title of A1>

Exceptional flow

E1: <Movie not found>

1. The <Actor> enters text into the search bar
2. The system checks the database for all movies based on what was entered into the search bar.
3. The system is unable to find a movie
4. The search bar will display a message saying" Movie not found"

Termination

The user is brought to the movie page.

Post condition

The system goes into a wait state

2.1.5 Requirement 4 <Movie Page>

This requirement details the features of each individual movie page.

2.1.5.1 Description & Priority

This requirement details all of the features available to the user on each individual movie page. These features include the ability leave reviews provided they have

logged in, the ability read all reviews of the movie so far, to see the cast for the movie and to read a synopsis of the movie.

2.1.5.2 Use Case

Scope

The scope of this use case is to allow users to navigate to each individual movie page on the application and to be able to utilise all of the features related to the movie pages.

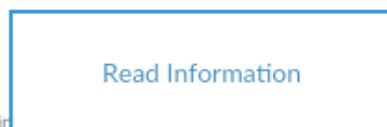
Description

This use case describes how the user can navigate to any individual movie page and how they can use any of the features available on these movie pages. These features include These features include the ability read all reviews of the movie so far, to read a synopsis of the movie, to read information such as who are the cast members of the movie are.

Use Case Diagram



User



nlir

Flow Description

Precondition

The user has searched for a movie page.

Activation

This use case starts when the user navigates to a movie page.

Main flow

1. The <Actor> selects the movie page
2. The <Actor> is brought to the page.
3. The <Actor> reads the reviews of the movie.

Alternate flow

A1: <Read Synopsis >

1. The <Actor> selects the movie page
2. The <Actor> is brought to the page.
3. The <Actor> reads the synopsis of the selected movie.

Alternate flow

A2: <Reads cast Information>

4. The <Actor> selects the movie page
5. The <Actor> is brought to the page.
6. The <Actor> reads the cast information related to the selected movie

Exceptional flow

E1: <Wrong page >

7. The <Actor> selects the movie page
8. The <Actor> is brought to the page.
9. The movie page the <Actor> is brought to is not the movie page that the <Actor> wanted

Termination

The <Actor> is brought to the page.

Post condition

The system goes into a wait state

2.1.6 Requirement 6 <Cinema Directions>

This requirement details Direction functionality of the application.

2.1.6.1 Description & Priority

This requirement allows users to be directed to their selected cinema by using their GPS coordinates. The feature will find the best and shortest distance for the user to travel in order to reach their selected destination.

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2.1.6.2 Use Case

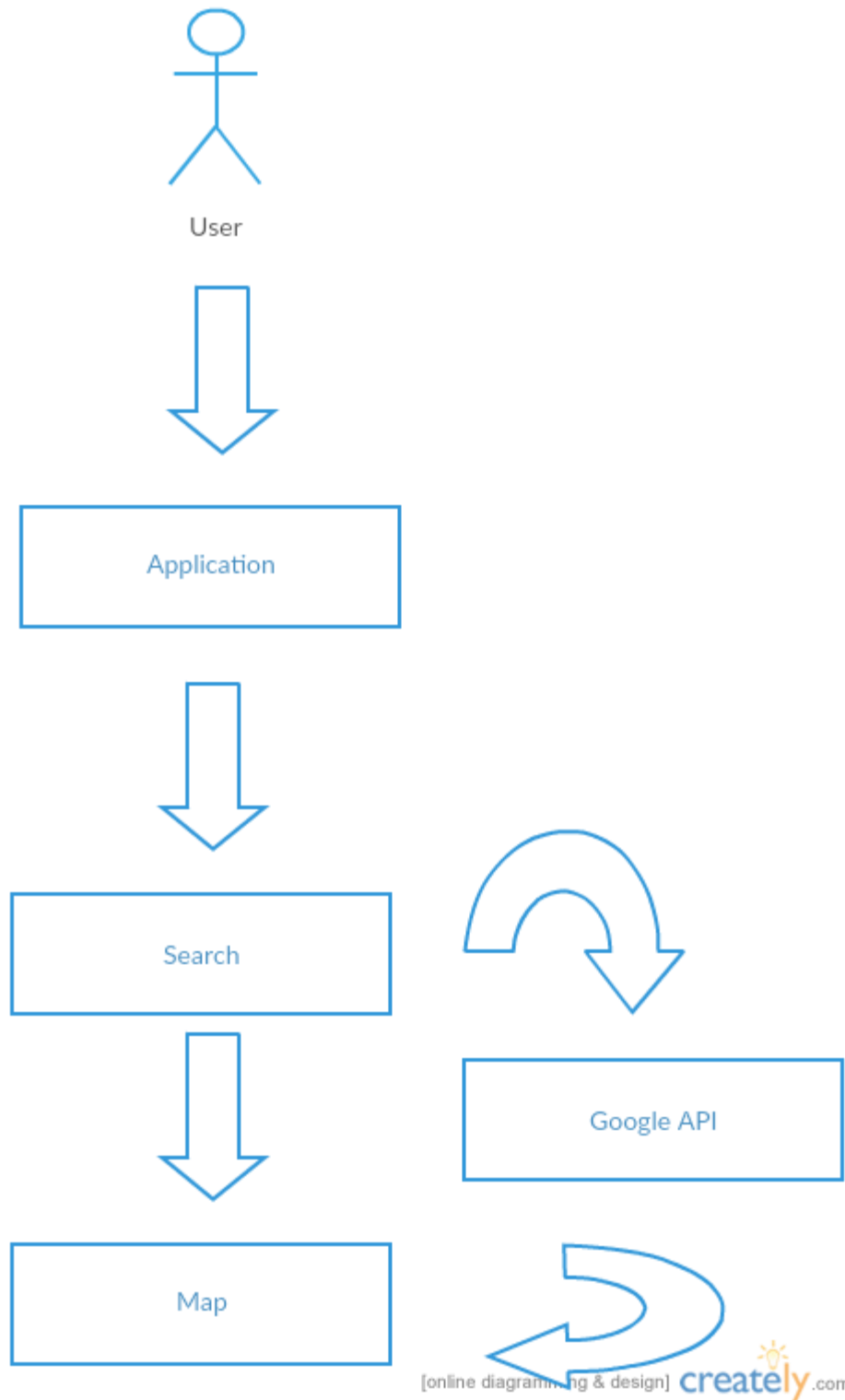
Scope

The scope of this use case is to allow users to select a cinema and to be given accurate directions to the cinema based off of their current GPS coordinates.

Description

This use case describes how the users are given directions to a cinema that they have chosen on the book tickets page. Once the user selects the directions button their current GPS coordinates will be used to determine where they are, where the selected cinema is and what the shortest route to reach this destination is. This feature will use the google maps API to fetch and return this data to the user.

Use Case Diagram



Flow Description

Precondition

The user has Wi-Fi enabled and is allowing the app to use their current location.

Activation

This use case starts when the user selects directions button on the book tickets page.

Main flow

1. The <Actor> selects the directions button.
2. The <Actors> GPS coordinates are sent.
3. The <Actors> GPS coordinates are received.
4. The shortest possible route is determined.
5. The <Actor> reaches their destination.

Exceptional flow

E1: <Cancel >

1. The <Actor> selects the directions button.
2. The <Actors> GPS coordinates are sent.
3. The <Actors> GPS coordinates are received.
4. The shortest possible route is determined.
5. The <Actor> selects the cancel button.
6. The <Actor is returned to the previous page.

Termination

The <Actor> is returned to the book tickets page.

Post condition

The system goes into a wait state

2.2 Non-Functional Requirements

2.2.1 Performance/Response time requirement

All system functions must be performed within a certain time frame. I intend for this time frame to be at least 4 seconds.

2.2.2 Availability requirement

It is important that all applications are available at all times of the day and that the application will be able to handle large amounts of people using the app at the same time, ensuring that no feature becomes unavailable or unresponsive.

2.2.3 Recover requirement

If the app was to crash, it is important that all user data that has been stored in the database can be easily and quickly recovered.

2.2.4 Security requirement

With the application storing user information in the database it is important that the database is totally secure. With the database being built using SQL it is important that it will not be compromised by attacks like SQL injections.

2.2.5 Reliability requirement

It is important that all features of the application are available to users. If there is a large amount of people using the application at the same time it is important that this does not affect any of the functions and does not hinder the application's performance.

2.2.6 Portability requirement

With this application being a mobile android app it is important that the application is available on most if not all of the android operating systems, ensuring that the application will reach a larger audience.

2.2.7 Data requirements

This section will highlight the data requirements which are needed in the implementation of the features listed above.

- **SQL:** This application will be used to retrieve and store the user data in my database. This data is accessed and retrieved through the use of PHP files.

2.2.8 User requirements

This section will describe the user requirements. These requirements are essential in order for the app to function properly.

- **Android:** The user must have access to an android device.

- **API:** The minimum API level for this application is API level 19. This API level is for Kit Kat (4.4) which is the most commonly owned operating system amongst android users.
- **PlayStore:** The user must have access to the android PlayStore in order to download the application
- **Internet Connection:** The user must have access to an internet connection in order for features like map and movie data to function.

2.2.9 Environmental requirements

This section will describe the environmental requirements which are needed for the development of the application.

- **Windows:** This project was developed on a laptop running a windows operating system with android studio installed and used as the IDE.
- **Android Mobile Device:** An android mobile phone was required during the running and testing of the application during different stages.
- **Internet Connection:** Internet access was required to test the applications features as well as connect to the database and gain access to various resources needed during development.
- **Photoshop:** Gimp 2 was the Photoshop tool used to create image assets needed for the applications development.

2.2.10 Usability requirements

This section will describe the usability requirements which describe objectives during the interface and design process. These requirements evolved from the meetings I had with potential users as mentioned above.

- **Understandable:** The user interface will be easy to understand and use.
- **Operable:** The actions should be consistent. Any errors that occur should explain where and why there was an error.
- **Ease of Use:** The system should be easy to learn and use. Someone who would be considered a novice when it comes to mobile applications should be able to use the app easily.
- **Attractiveness:** The layout should be aesthetically appealing to users and add to the overall user experience.

2.3 Design and Architecture

Architecture Design

This application was built using XML and Java but due to the nature of some of the features implemented the use of a SQL database and PHP was also required. My experience in java was a key influential factor in making my decisions during the development of the application.

The XML pages were designed in a way that when a user navigates through multiple pages that the transition be as smooth and as fluid as possible.

Hardware Architecture

The only hardware that will be used during the development of my mobile application will be a mobile device that is running an android operating system that is no older than the Kit Kat 4.4 operating system. This device will be used during the testing phase of the application development and also during demonstrations.

Performance

For the application it is important that all system functions must be performed within a certain time frame. I intend for this time frame to be at least 4 seconds. It is also important that the application is fully functional and does not run with performance issues between all supported devices and operating systems. The performance however will be effected by the individual user's mobile device, their memory availability and the strength of their internet connection.

2.4 Implementation

This section will describe the technologies used in the implementation of the android application.

2.4.1 Technology Overview

The approach taken to develop this application was done through the use of the Android Studio IDE. This approach involved the use of Java as the programming language and XML used to design the GUI of the application. The development of this app also required the use of a SQL database to store information and PHP to connect the database to the application.

2.4.2 Technologies

2.4.2.1 Android Studio

Android Studio is a powerful development environment that was used for the development of the application. Android studio is based on the IntelliJ Idea. In addition to the IntelliJ code editor android studio offers features such as a flexible Gradle build system. Build variants and multiple APK file generation and an easy to use layout editor which supports drag and drop theme editing.

2.4.2.2 Java

Java is a programming language used in the development of object oriented software. Android development requires the use of a slightly modified version of java. In order to develop an android application, you must use java as the primary

development language in order to create functionality, however, other third party SDK's are available for developing on android studio.

2.4.2.3 XML

XML stands for **extensible mark-up language**. XML is a self-descriptive language, which carries data for use in the android application. In android development XML defines the user interface, including all the views and elements.

2.4.2.4 SQL

SQL stands for **structured query language**; it is a special purpose programming language designed for managing data held in a relational database management system. A SQL database was created for this application in order to store user account information.

2.4.2.5 PHP

PHP is a server side scripting language. PHP code was written in order to connect the android application to the database.

2.4.2.6 GIMP 2

Gimp 2 is a free Photoshop tool used throughout the development of the application to create and edit image assets for the application.

2.4.2.7 Android AVD

Android studio comes with virtual device emulator allowing you to install different versions of android phones to run applications on. Using the AVD helps with testing the functionalities of the application.

2.4.2.8 Google API

Google offers a wide variety of APIs that can be included in applications. The application uses both the map and directions APIs to generate the map.

2.4.2.9 Rotten Tomatoes API

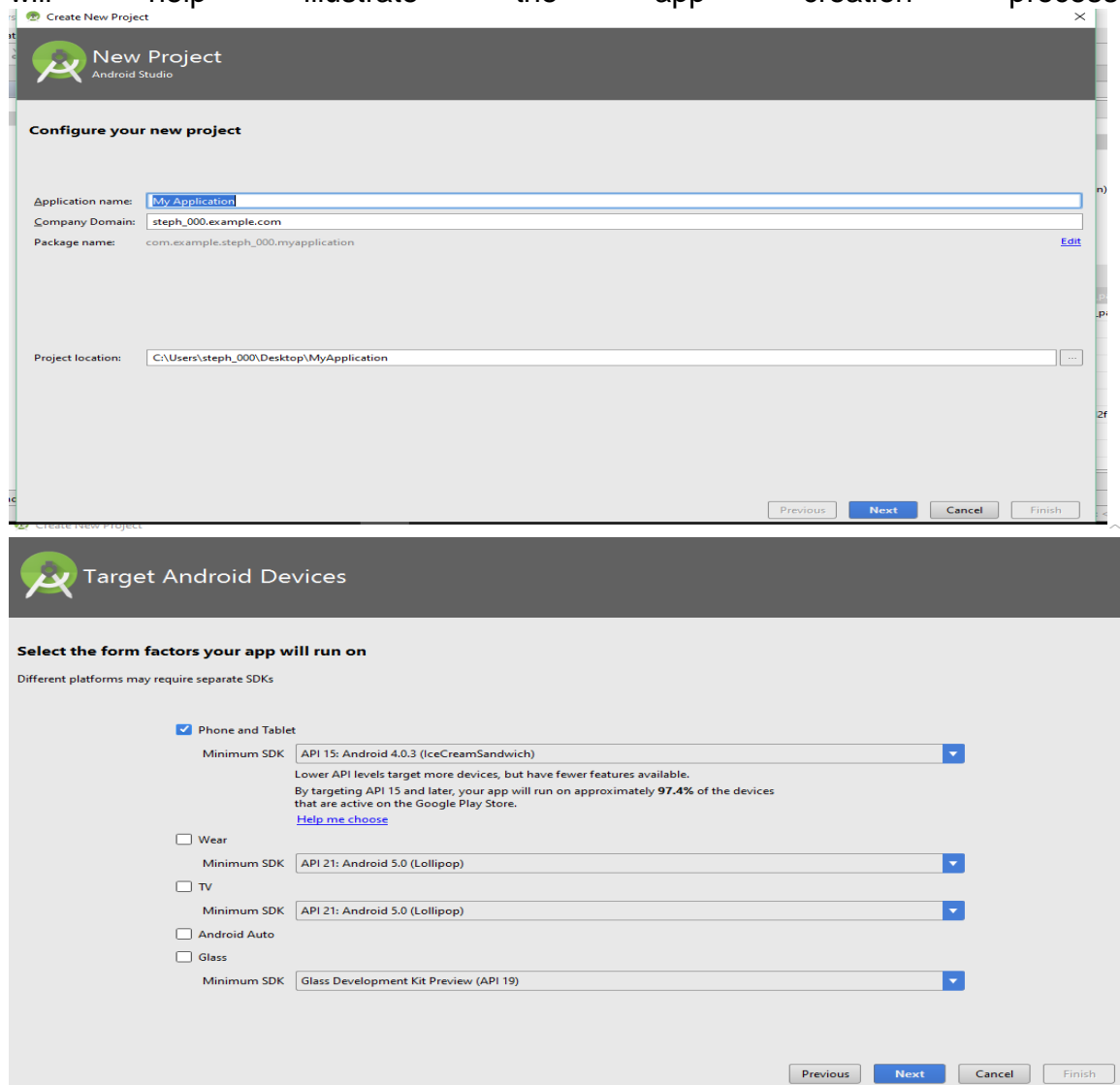
The Rotten Tomatoes API provides a wide variety of data that can be searched and retrieved. This API was used in the development of movie pages.

2.5 Procedures

This section describes how the technologies were implemented.

2.5.1 Project Creation

Android studio was the IDE used in the development of the application. When creating an application, you must enter an application name, a package domain name and define the location of the project. You must also define the minimum SDK needed to run the application and finally define the main activity and its corresponding XML layout file. With this done the next step is to import dependencies that will be using during the project development. The images below will help illustrate the app creation process.



The first screenshot shows the 'Create New Project' dialog in Android Studio. The title bar says 'Create New Project'. The main header is 'New Project' with the Android Studio logo. Below it, the subtitle is 'Configure your new project'. The form contains the following fields:

- Application name: My Application
- Company Domain: steph_000.example.com
- Package name: com.example.steph_000.myapplication (with an 'Edit' link)
- Project location: C:\Users\steph_000\Desktop\MyApplication (with a browse button)

At the bottom, there are buttons for 'Previous', 'Next', 'Cancel', and 'Finish'.

The second screenshot shows the 'Target Android Devices' screen. The title bar says 'Create New Project'. The main header is 'Target Android Devices'. Below it, the subtitle is 'Select the form factors your app will run on'. A note says 'Different platforms may require separate SDKs'. The form contains the following options:

- ☒ Phone and Tablet: Minimum SDK is set to API 15: Android 4.0.3 (IceCreamSandwich). A note below says: 'Lower API levels target more devices, but have fewer features available. By targeting API 15 and later, your app will run on approximately 97.4% of the devices that are active on the Google Play Store. [Help me choose](#)'
- ☐ Wear: Minimum SDK is set to API 21: Android 5.0 (Lollipop)
- ☐ TV: Minimum SDK is set to API 21: Android 5.0 (Lollipop)
- ☐ Android Auto
- ☐ Glass: Minimum SDK is set to Glass Development Kit Preview (API 19)

At the bottom, there are buttons for 'Previous', 'Next', 'Cancel', and 'Finish'.

2.5.2 Google APIs

Implementing the map feature of the application was one of the most difficult aspects of the development process. The map is enabled to create a custom view of all of the cinemas near the user based on their current GPS coordinates, it also allows for the user to search for a specific cinema in a search bar.

With the address of the location found the user can then use the directions feature of the app to show them the best possible route to their destination.

The main difficulty faced in the creation of was implementing the APIs. There are many different tutorials available online showing how to integrate different Google APIs, however, many of these tutorials are at least three years old, so the code being used is a little outdated. I spent a lot of time trying to rework the code to suit my applications needs. The code snippet below shows the dependences needed to utilise any Google API

```
compile 'com.google.android.gms:play-services:8.4.0'
```

2.5.3 Rotten Tomatoes API

The implementation of the Rotten Tomatoes API was a crucial part of the development of the application. The Rotten Tomatoes API handle the fetching, retrieval and display of any movie related information. This feature allows the user to retrieve a list of upcoming box office movies and search for any movie contained in the Rotten Tomatoes database. The API will also handle the data that is displayed in the individual movie pages.

When the individual movies are retrieved via the API they are displayed in a ListView format and once a movie is selected from the ListView an intent is launched to bring the user to that movies individual movie page which is contained in a detail view. The code snippet below shows the method used for accessing the Rotten Tomatoes API.

```
public void getBoxOfficeMovies(JsonHttpResponseHandler handler) {  
    String url = getApiUrl("lists/movies/box_office.json");  
    RequestParams params = new RequestParams("apikey", API_KEY);  
    client.get(url, params, handler);  
}
```

2.5.4 Login & Registration

The SQL database was created and controlled through the use of phpMyAdmin. phpMyAdmin is a free open source tool written in PHP. WAMP was used as the server for the android application and database. Once the database was created PHP code was written in order to connect the database to the application.

When the user first interacts with the application they are given two option, either registration or logging in to an existing account. If they select register they are brought to the registration page where they will be prompted to enter the necessary details (e.g. username, password, email, etc.). Once registered the user's details are then stored in the database. These details can then be retrieved once the user fills out the required details. Once the user has logged in the system connects to the database to retrieve the account information and checks for authentication. Once this process is completed the user is logged in and brought to the home page.

I have never used PHP before so creating the database and connecting it to the application was a part that required a large amount of research to ensure that all of the related aspects were set up correctly. The following snippet is the PHP code used create a new user during registration.

```
$user = $db->storeUser($name, $email, $password);
    if ($user) {
        $response["error"] = FALSE;
        $response["uid"] = $user["unique_id"];
        $response["user"]["name"] = $user["name"];
        $response["user"]["email"] = $user["email"];
        $response["user"]["created_at"] = $user["created_at"];
        $response["user"]["updated_at"] = $user["updated_at"];
        echo json_encode($response);
    }
```

2.6 Testing

Software testing is a crucial aspect in the software development lifecycle. In order to test the application and all of its features effectively, I dedicated a large portion of time to it. The steps I took are as follows.

2.6.1 Unit Testing

As each function of the application was created, I carried out unit testing. This separating the particular function from the overall app and running it on the emulator and then an android device. The way the function performed in this state was noted. Once this was done the function was re-instated to the application and then tested again in the same format as before. This process was done on all features of the application to ensure that were working as intended. A variety of android devices of different screen sizes and operating system versions where used during this form of testing to ensure that the application would be able to run smoothly on different devices. This form of unit testing was highly beneficial to the development of the application.

2.6.2 Backwards Compatibility Testing

The app was primarily tested on an android device running the operating system lollipop (5.1.1). This was done because that was the most available device at my disposal. Test were also carried out on other android devices running older operating systems. No problems arose until the application was installed on a device running the operating system Jelly Bean (4.2). This was expected however, due to the fact that the application is not designed to run on a device with an API level less than 19.

2.6.3 Human Testing/ Black Box Testing

To fully test the application, I gathered a group of people of varied experience in using mobile technology. These people were given access to the full application and asked to perform different tasks. Their experiences and comments were then recorded.

<u>Candidates:</u>	Sean Clare(21)	Carlos Day Pomar(43)	Margaret Barker(61)
<u>Test Name:</u>	Log in with false details	Use maps without GPS enabled.	Search Movies
<u>Purpose of Test</u>	This was done to test the database verification.	This was done to test what would happen to the map function without providing GPS coordinates	This was done to test the variety of results from the Rotten Tomatoes API.
<u>Steps</u>	<ul style="list-style-type: none"> • False username entered • False password entered • Select login button 	<ul style="list-style-type: none"> • Turn of GPS location on mobile device • Select maps button and launch map 	<ul style="list-style-type: none"> • Enter as many movie titles into app search bar as possible. • View details page of each movie
<u>Expected</u>	Toast message will display telling user that their login was unsuccessful.	Map will not locate users position and will not have any markers of places shown.	The API will find each movie entered and will return with the corresponding movie detail page.
<u>Results</u>	Pass	Pass	Pass
<u>Overall App Comments</u>	"the app is pretty handy the way you can see what the critic thought of the movie and what normal think of it too"	"I like the idea of the app showing you different theatres near you. If I was on holidays and wanted to know where the nearest cinema is this app would be a big help."	"The app is very nice, really simple and easy to understand what everything does."

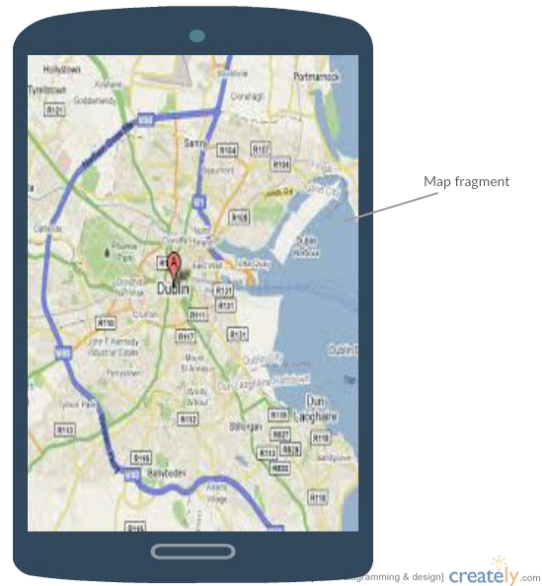
2.7 Graphical User Interface (GUI) Layout

The Graphical User interface was designed to make the layout of the application as simple, easy to use and aesthetically pleasing as possible.

When the application is started the user is presented with the login page. The following diagram will illustrate UI of this page



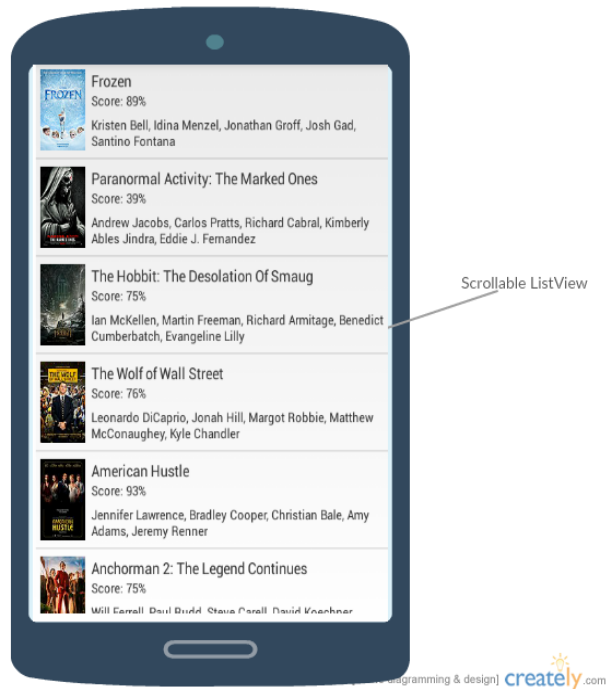
The following diagram illustrates the map feature which is used to determine the user's current location and locate the movie theatres that are closest to their current position.



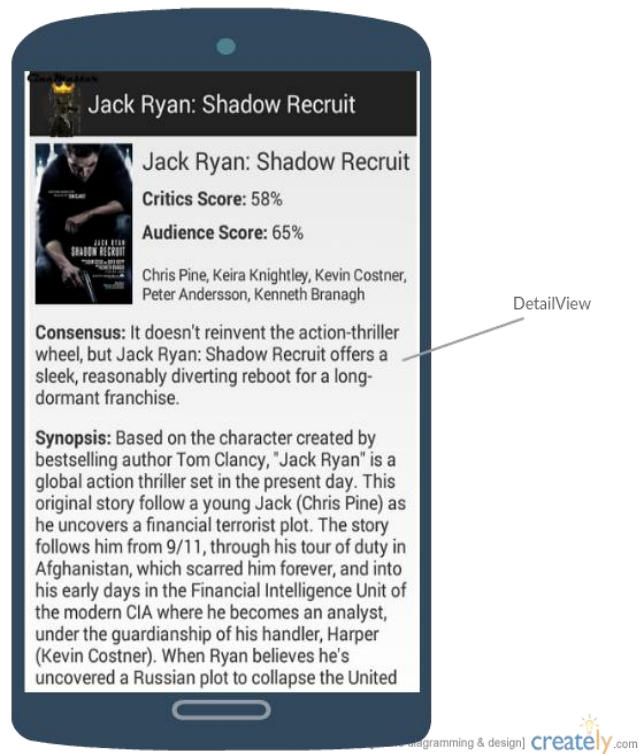
The following diagram illustrates the direction feature which is used to provide the user with the best possible route to their selected destination.



The following diagram illustrates the movie list which is retrieved from the Rotten Tomatoes API. This information is displayed in a ListView.



The following diagram illustrates the movie detail page. The data in this page is also retrieved from the Rotten Tomatoes API. The data returned here is displayed in the DetailView.



3 Conclusions

This report sets out the background for my reasoning for developing this android application. It describes my motivations and aims clearly and in detail. The report also defines the technologies used during the development of this project and how they were implemented.

Developing this application has proven difficult but very fulfilling and I feel that I have gained considerable knowledge from the experience. The development process was indeed challenging, sometimes proving extremely challenging, but overcoming these challenges has given me a greater understanding of the different aspects needed in creating mobile applications. I had very little experience in the area of databases, PHP and mobile development as a whole, but through the development of this project I feel more confident in the use of these tools and languages and will definitely continue to use them in future projects. Having a passion for the subject matter was essential in motivating me during this process and encouraged me to work harder during difficult periods. One regret that I have is that I was unable to implement all of the features that I originally set out to create, but in the future I am confident in my capabilities to make this a reality. I am pleased with the outcome of the application. Despite the disappointments and frustrations faced in the development process, I am proud of my accomplishments during this experience of developing an application.

4 Further development or research

I intend to continue developing this application in the future. I believe that with further developments I can create a very successful android application.

I already have plans on how to further expand the ideas that I have circulating. Similar to the information regarding movies, I wish to provide users with the same for other areas of interest such as shops, restaurants gyms, etc. I also intend to develop the app for both IOS devices and windows phones in order to reach a larger audience.

With further developments, I hope that in the future the application will prove to be a major competitor for industry leaders such as Yelp, Google Maps and IMDb.

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5.1.3.1 *Android Google Maps V2 Tutorial*

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6 Appendix

6.1 Project Proposal

1 Objectives

My objective is to create an android application which will allow users to navigate through a list of upcoming movies, see an aggregate rating for all of the movies present on the list, it will also allow the user to comment and leave their own review of the movie for other app users.

The app will accumulate all of the reviews for a movie into one score shown to the user.

The app will also allow the user to search through all of the movies held within the apps database and see the reviews for that movie.

For each movie on the app I hope to have trailers for the movies embedded in the app. The app will also take the users current location return to the user a list of cinemas and show times of the movie that they have selected within their area.

I also intend to implement a login in feature that will allow to users to sign up and create an account for the app and once they have logged in they will be allowed to track upcoming and current movies that they would like to see and also return a list of movies for the user that are based on the movies that the users has tracked

2 Background

I have always had a passion for movies and the cinema, and with the rapid growth of smartphone applications there has been one on my mind. Many times I have been out with my friends and we would all want to see a different movie, so we would usually pick a movie based on how appealing the trailer was, this was more often than not a poor choice, so the thought occurred to me I should download one of the apps that reviews movies. I found that many of these apps were lacking, they would provide the user with only a single a review when in reality people would see as many review for movies as they could to give them

an overall consensus. So I thought why not provide people with an app that will do all of this all on their smartphone.

The more I researched about the app I thought why limit the app to just reviews, I could make it all encompassing, allow the user to learn as much about their chosen movie as possible. Let them see the trailers, the reviews, and even let them see show times and book tickets for their local cinema.

I decided to build and run my application as an Android application because, for one the android development tools available I find are friendlier to developers as compared to their IOS and windows counterparts. The android operating system also has the largest market share therefore it would be easier for me to reach a larger consumer base. I also have experience in using android studio from past projects so I am relatively familiar with this IDE.

3 Technical Approach

I intend use android studio as the development environment for the application. Android studio offers a large array of supporting libraries to aid with the development. Using the android SDK, I will be able to create a user friendly GUI.

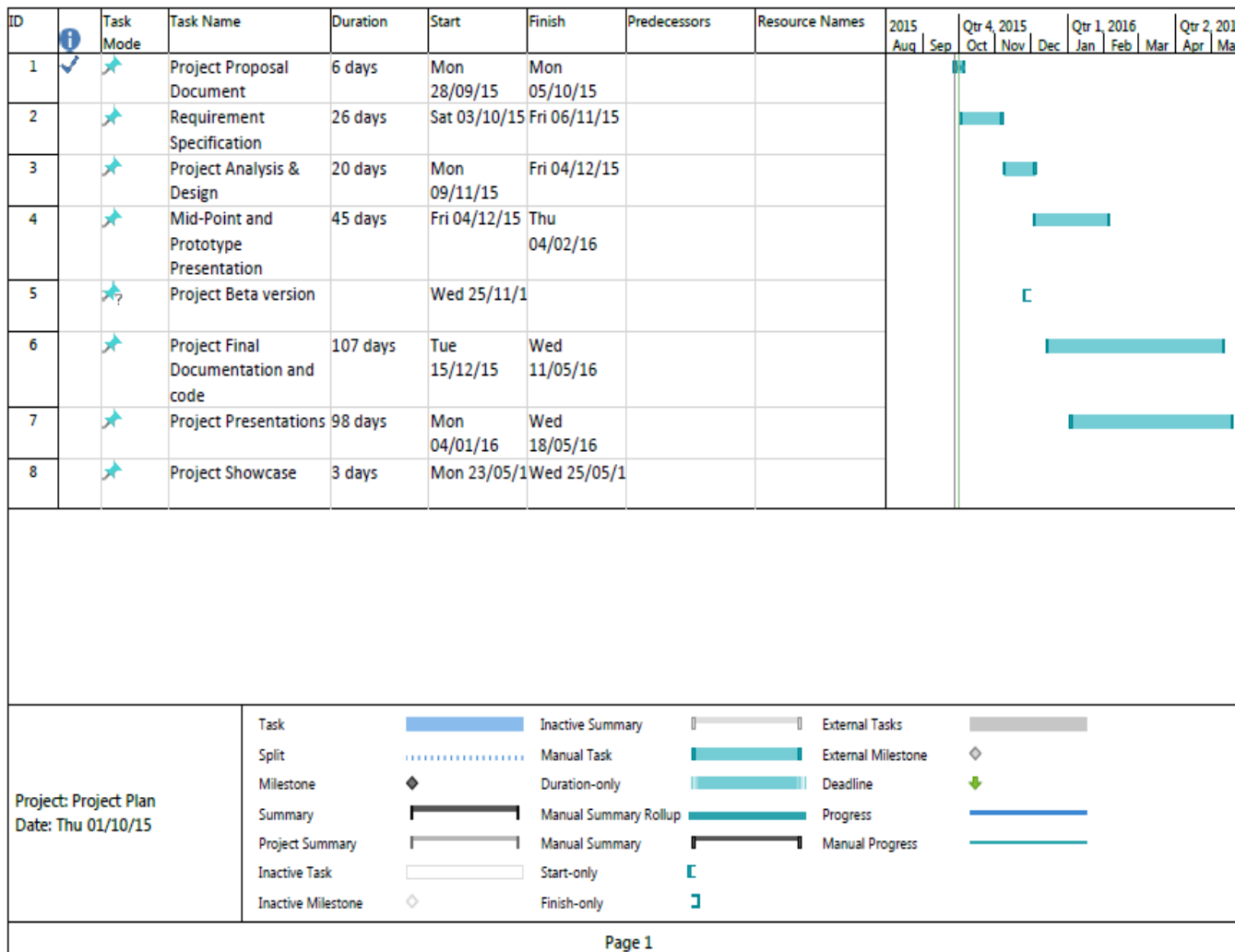
Since I have the most experience with java programming I intend to use this programming language to add functionality to my app.

While I have little experience in doing so I also hope to use php to develop and integrate a database into my application. I also have experience in using SQL so this will also help in the development of my application.

4 Special resources required

To the best of my knowledge I do not believe that any special resources will be require for the development of my application.

5 Project Plan



6 Technical Details

I intend the application to be written using java, I am using java due to my familiarity with the programming language. I also intend to use the android development studio again because of my familiarity IDE. I also intend to use SQL to develop my database.

7 Evaluation

I intend to use the selenium application for testing, I have a small amount of experience in using this app, using selenium will allow me to create testing scripts which will aid me in automation testing, which I believe in will greatly benefit me in logging and fixing bugs.

7.1 Project Plan

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	2015 Aug	Sep	Qtr 4, 2015 Oct	Nov	Dec	Qtr 1, 2016 Jan	Feb	Mar	Qtr 2, 2016 Apr	May										
1		Project Proposal Document	6 days	Mon 28/09/15	Mon 05/10/15																						
2		Requirement Specification	26 days	Sat 03/10/15	Fri 06/11/15																						
3		Project Analysis & Design	20 days	Mon 09/11/15	Fri 04/12/15																						
4		Mid-Point and Prototype Presentation	45 days	Fri 04/12/15	Thu 04/02/16																						
5		Project Beta version		Wed 25/11/15																							
6		Project Final Documentation and code	107 days	Tue 15/12/15	Wed 11/05/16																						
7		Project Presentations	98 days	Mon 04/01/16	Wed 18/05/16																						
8		Project Showcase	3 days	Mon 23/05/16	Wed 25/05/16																						
Project: Project Plan Date: Thu 01/10/15		Task		Inactive Summary		External Tasks																					
		Split		Manual Task		External Milestone																					
		Milestone		Duration-only		Deadline																					
		Summary		Manual Summary Rollup		Progress																					
		Project Summary		Manual Summary		Manual Progress																					
		Inactive Task		Start-only																							
		Inactive Milestone		Finish-only																							
Page 1																											

7.2 Monthly Journals

Reflective Journal

Student name: Stephen Reilly

Programme: BSc in Computing

Month: September

My Achievements

For the month of September, I was able to:

Come up with an idea for my final year software project. In all honesty this was a little more difficult than I imagined it would be, I had toyed with a few ideas over the summer months but I never really came to a decision, so when college started up again I was a little anxious because I was still not able to decide on what I wanted to do. After much deliberation and research, I was able to decide on what I wanted to do. I have a passion for movies and cinema so an app related to this area would be interesting to me.

I was also able to complete my project proposal. At the start I was a little concerned because my idea was at a very base level and I was unsure as to what technologies I would be implementing. But after hearing that it was perfectly fine to put down what you think you will be using in the development I felt more at ease.

My Reflection

I think that I worked well in coming up with various ideas as to what to do for my project, however I do realise that for a long period I was very indecisive, and in the later stages of the application development I will need to overcome this so that I won't put myself under needless pressure.

Intended Changes

Next month I hope to get started on the prototype of the app, there are a few tutorials on the web for features that I hope to include in my app and I also need to brush up on how to use android studio since it is an IDE that I have not used in a long time.

Reflective Journal

Student name: Stephen Reilly
Programme: BSc in Computing
Month: October

My Achievements

In the month of October, I had my first meeting with my project supervisor. We discussed my project and he gave me advice as to how I could achieve the most marks. We also discussed how I could separate my app from other similar applications. This meeting made me feel much more confident as before I felt that I would struggle to achieve the marks I needed, but my supervisor reassured that it was well within my capability to achieve the marks I want.

This month I was also able to work on the user interface for my project. I think I have the general design of the project complete however I still need to work on how it will be implemented.

Unfortunately, I was not able to get as much work as I wanted done due to the fact I had many other assignments due in during October.

My Reflection

Unfortunately, I was not able to get as much work done on the app this month as I wanted to. For the next month I need to try and get much more work done as I need to get the prototype ready as soon as possible.

Intended Changes

For the next month I hope to get much more work done on the prototype. I am also going to have a greater look into other apps that are similar to mine so that I can see what I can implement into my application that will make it stand out more.

Supervisor Meetings

Date of Meeting: 21/10/2015

Items discussed: How to innovate in the project.

Action Items: Study the marking scheme and work out the best way to obtain the most marks from the project. Study other applications similar to mine and see what I can introduce to my application to improve it and make it stand out.

Reflective Journal

Student name: Stephen Reilly
Programme: BSc in Computing
Month: November

My Achievements

In the month of November, I was able to create, review and edit my project requirement specification. I also had my second meeting with my project supervisor on my requirement specification document, he gave me some useful feedback on the document and how I could improve it. My supervisor also introduced me to the cloud 9 development environment, I have had no prior experience with this development environment so it was interesting to research into it and see how it could benefit my project. In this month I also conducted research on how to implement a database into my application. Most of research was spent re-familiarising myself with SQL databases, due to the fact I have more experience using SQL than any other language.

My Reflection

November was another busy month with many assessments and projects being due, I am however happy with the work that I was able to complete on the project. I feel more confident about my ability to reach project deadlines in the coming months.

Intended Changes

With the next month being Christmas I think it will have provided me with a good chance to get a lot of work done on the project. Obviously there will days where I won't be able to get any work done, but if I organise myself a little better I think I can make a lot of headway with the project.

Supervisor Meetings

Date of Meeting: 21/10/2015

Items discussed: Requirement Specification.

Action Items: Review requirements specification and highlighted areas where improvement was needed. Research into the cloud 9 development environment and see how it can be used in project development.

Reflective Journal

Student name: Stephen Reilly
Programme: BSc in Computing
Month: December

My Achievements

In the month of December, I have learned some android development to help with my application. I set up the android developer tools, the java SDK and the eclipse IDE to handle the application development. I started off using these new tools by creating a simple android application from an online tutorial, while in the past I have looked into android development but overall it is very new to me and it took me a while to get my head around the new style coding, and to refresh my knowledge on using XML. The start of December was spent finishing up other projects for different modules, now that these are completed I can a lot more work done on the app.

My Reflection

I feel so far that December has been a successful month, I was able to create my first application and I now feel that I have a good foundation to build on for what I need to complete my final year project. With no assignments due the next few weeks will have provided me with a good opportunity to get a lot of work done on the project.

Intended Changes

The next few weeks are important because I would like to produce a good prototype for my mid-point presentation, I aim to have each of the requirements of my application to be functional to a good degree for the presentation. I aim to have this done by the end of January.

Reflective Journal

Student name: Stephen Reilly

Programme: BSc (Honours in Computing)

Month: January

My Achievements

For the month of January, I was primarily focused on preparing for my mid-point presentation. Most of my time was spent on the application and making sure that I have enough to demonstrate the how the application will function. This month I hit a wall on the development of the function to book cinema tickets, I need to look deeper into the different ways that I can develop this function as what I have so far is not doing what I had originally envisioned.

I have also spent a good amount of my time on completing the technical report for the midpoint presentation. This is going well and I hope to get a good result from this document.

My Reflection

January was the most panic filled month so far. I had originally worried that I did not have enough of my application working to provide a good representation, however the closer I come to the presentation the more confident I feel that what I have to demonstrate and elaborate upon during the presentation will adequately represent the progress I have made in the project.

Intended Changes

With the upcoming presentation I anticipate I will get a lot of feedback on how to proceed with my application. I intend to take these suggestions on board to help with the development of the application.