

# RISE OF EMPIRES

FINAL REPORT

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## Introduction:

Our final year project is a mobile based strategy game revolving around the concept of building a community and training troops to attack opponents. It is a multi-player game that can be played online with real time users as well as pseudo single player scenario mode.

The game will start from a basic level and after playing and earning good scores, the level will be upgraded. After N number of upgrades in the level, the era will be upgraded as well.

The game targets people of all ages who have love playing games on their mobile phones. While this game provides enjoyment, it also serves as a source of knowledge and information.

## High Level Design:

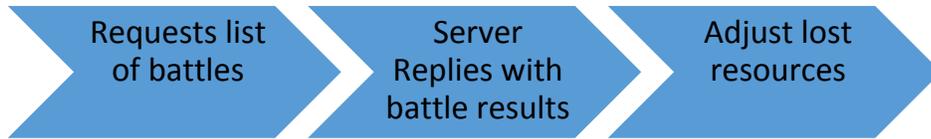
Mobile games are all the hype nowadays. While they are a source of entertainment for people of all ages they act as a great marketing tool and also have the potential to allow game developers to earn millions of dollars on a daily basis. Our team wishes to excel in this field since it has a high possibility to grow in years to come. This is the reason why we opted for developing a game as our final year project.

Strategy games are one of the most trending and widely popular type of games played on mobile devices. One of the very famous strategy games is Clash of Clans which is widely played and has 21,074,035 downloads on Google Play Store. Taking inspiration from the most used gaming application, we have built our own game and have expanded on a number of their limitations.

## Software/Hardware Design:

### ***Battle Logic:***





*Enemy Results:*

**Prominent Features:**

Being a strategy game, the project has intricate features each of which is discussed in detail below:

### **1- Path Finding:**

The player deploys units to attack an opponent base. These units find their way to the buildings they are supposed to destroy by finding the shortest distance from the position they're deployed on to the position of the building to be destroyed. This is done using A\*search which is a path finding algorithm. The A\* uses the "best-first" and "least-cost" approach to find a path from the initial node to the goal node.

### **2- Learning via Facts:**

A prominent feature of our game that differs it from other games is that it offers learning. A series of facts is shown after the splash screen displaying information about famous warriors, emperors and battles of the world's history.

### **3- Grouping of Units:**

Units that are deployed to attack an opponent's bases can be grouped. These grouped units can then be placed at a certain building to attack and destroy it. This feature helps the attacker to build a strategy to deploy relevant groups of units at relevant buildings in order to maximize opponent destruction in order gain more score.

### **4- Offline Base Upgrades:**

The game can be played in offline mode which means that any changes made offline on the base, buildings and the troops will be synced automatically on the server once the user comes online.

### **5- Progress Synced in Text Files:**

Every time an attack is launched or changes in a base are made, the values are stored in a simple text file. These text files are hardly 1KB each, which implies that these files are not heavy and can be synced easily with low bandwidth upon connection with the server. This also increases the flexibility of the game since the files storing the progress of the game are low in size and hence do not occupy a lot of space.

### **6- Connection to Server:**

Another feature of the game is that the connection to server establishes only once. When the game is opened and the player comes online, a connection is made with the server where the progress files are synced, after which the connection is disabled.

### **7- Real Time Battle Strategy:**

A player can view live battles. While a player's base is under attack, they can build a real time strategy to defend their base.

### **8- Object Shadows:**

The graphics of the game are made in such a way that the objects placed on the map seem realistic and in order to ensure that, each object casts its shadow on the map making it look like a 3D object.

#### **9- Isometric View:**

The camera is placed in such a way that the game gives an isometric view. An isometric view or projection is a method for visually representing 3D models two dimensions. The models are made in 3D but are placed in 2D in the game and the camera view enhances these objects to make them look like they are in 3D.

#### **10- Collision free Objects:**

The buildings and units placed on the map are set in such a way that they do not collide with each other. For example, a building cannot be placed over another already existing building. A red boundary appears around the building to be placed when it collides with another building already arranged on the map and the option for placing that building is disabled since it is colliding with an existing building. Similarly, a walking unit cannot cross by another building that is already placed on the map.

#### **11- Google Account Integration:**

In order to assure that each user has their progress synced so that they can play on any device and are not bound to one single device, google account integration is made where they can login with their google account and their progress is synced.

#### **12- In-App Purchases:**

Since the team plans to launch the game in the market and earn from it as a full-fledged application, the in app purchases feature has been integrated where a few features like quick building updates, gems, resources like food and gold, and army units can be purchased.

#### **13- Upgrades:**

Level upgrades are also a feature of the game, where after certain updates the level will be upgraded. With an upgrade in level, resources will be added, buildings will become more efficient, troops will increase and other incentives will also be given.

#### **14- Chat With Online Players:**

To enable players to talk with other online players, a chat option is made available in the game where one online player can see other online players and have a conversation with them.

#### **15- Admin Panel:**

An admin panel is made to cater to the needs of the super user of the application, where they can see the campaign maps, the total number of players and attacks launched. The stats section shows battle stats and player stats. The campaign section shows the detail of each attack including the time and IDs of attack.

## **16- Other Features:**

- a. The buildings are animated.
- b. Player versus player battles feature is available allowing online players to attack other players' bases.

## **Conclusion:**

In a world dominated by technology, the opportunities for growth in the IT industry are increasing day by day. Mobile phones are now becoming more of personal computers which can be used to perform both daily tasks as well as business tasks. While these devices allow us to carry out work easily and anywhere on the go, they also provide entertainment through a number of applications in the gaming and entertainment field. A recent study shows that gaming, social networking and texting are the top three activities of a smartphone user which means that phones are now being used for reasons other than they were originally made for. Many mobile games have been developed for the purpose of providing entertainment for the users and also have been a source of income for its developers. The popularity of mobile gaming has exploded, and that means it's a booming industry. The prevalence of mobile gaming has actually grown so much that mobile devices have been identified as the most valuable gaming platform. Mobile games are even starting to pull ahead of social media games in terms of popularity. The success of these games is what inspired us to develop a game of our own. After thorough research of the game market and the products available, we have developed "Rise of Empires" which is guaranteed to provide its users entertainment and learning at the same time. It has light graphics and the data is stored in text files which makes it a light game which can be played on an Android device with minimum features.

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