Interim Report

Name of the team and team members

Team Name: - Elegance

Team Members:-

A G Kaushalya Pradeep (Group Leader)	15209237
Ashain Sumendra De Silva	15209236
Ranasinghe R A Buddhima T	15209266
Angana Janani Rathnayake	15209232
Kumari D A L Vijitha	15209806
M Hansini K Gunasena	15209405

Project Description

Project focuses on online multiplayer game (four players), which is played with human players. This game is variant of "count-down" game; the famous TV game show. Game is given the name as "FLOGO" in our project.

Basic Idea: Player objective is to finds the longest word given a set of letters and punishes the weakest player during each round of play.

About the game:

Game consists of three phases as describe below.

The Input Phase (IP): At the start each player is given two letters and then each player can specify how many consonants and vowels s/he wants. (Consonants + vowels = 10). These ten letters are then drawn randomly from standard Scrabble bag. Finally, after the draw has been made, each player is allowed to change either one consonant or one vowel.

The Processing Phase (PP): At this stage each player has 12 letters and has seen them all. Each letter is given a constant value. (Ex: A= 5, Z =10)The two initial letters given an additional score on top of their constant values. There are two ways to find the longest word:

> *Manual approach:* In the manual approach, each player is allowed to use their brain to find the longest word that has the highest score and then use the keyboard to input the word.
>
> *Automatic approach:* Automatically system finds out the longest possible word.

Flog Phase (FP): At this phase lowest scored player (round score) at the end of the each round is punished by reducing their score/s.

Single game consists of three rounds and player/s with highest total score is announced as the winner at the end of three rounds.

Development Methodology: Agile Scrum

Technologies and tools:

Programming Language: Java

Front End: JavaFX Backend: Hibernate 5.1.0 Final

Database: MySQL 5

IDE: eclipse Mars

Facebook API (restfb)

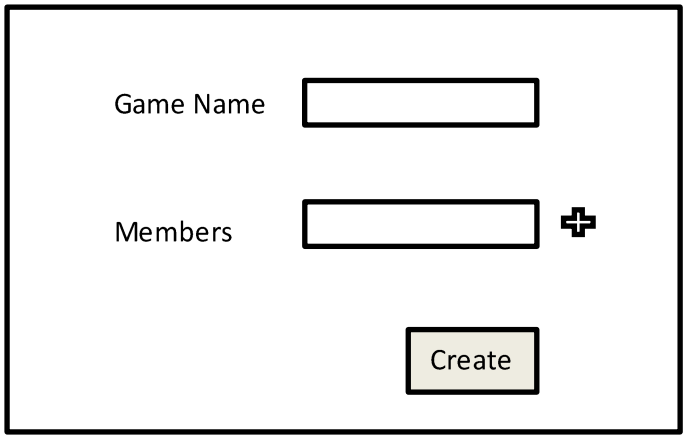
Server: Amazon server (free version)

Network Model used: Client Server

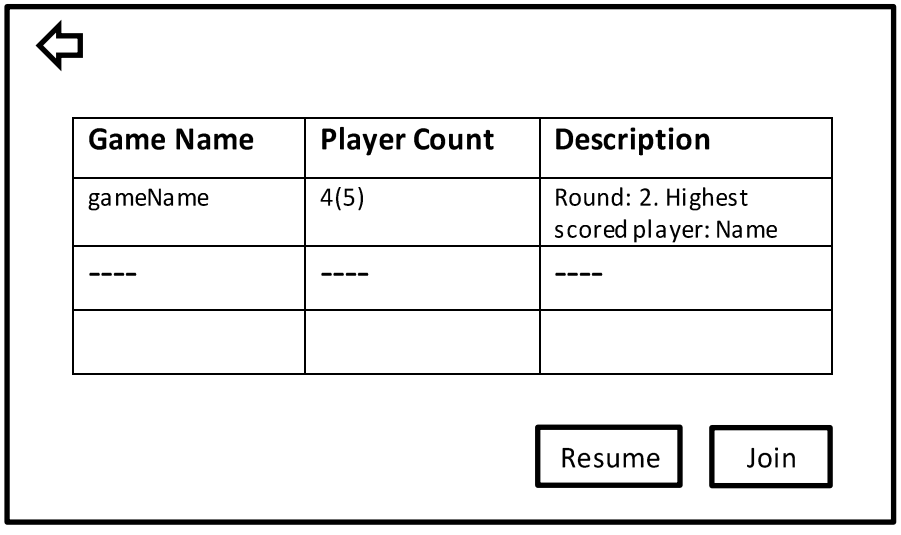
Project Design

Screen Flow

New Game Screen



Join Game Screen



Game Name	Player Count	Description
gameName	4(5)	Round: 2. Highest scored player: Name
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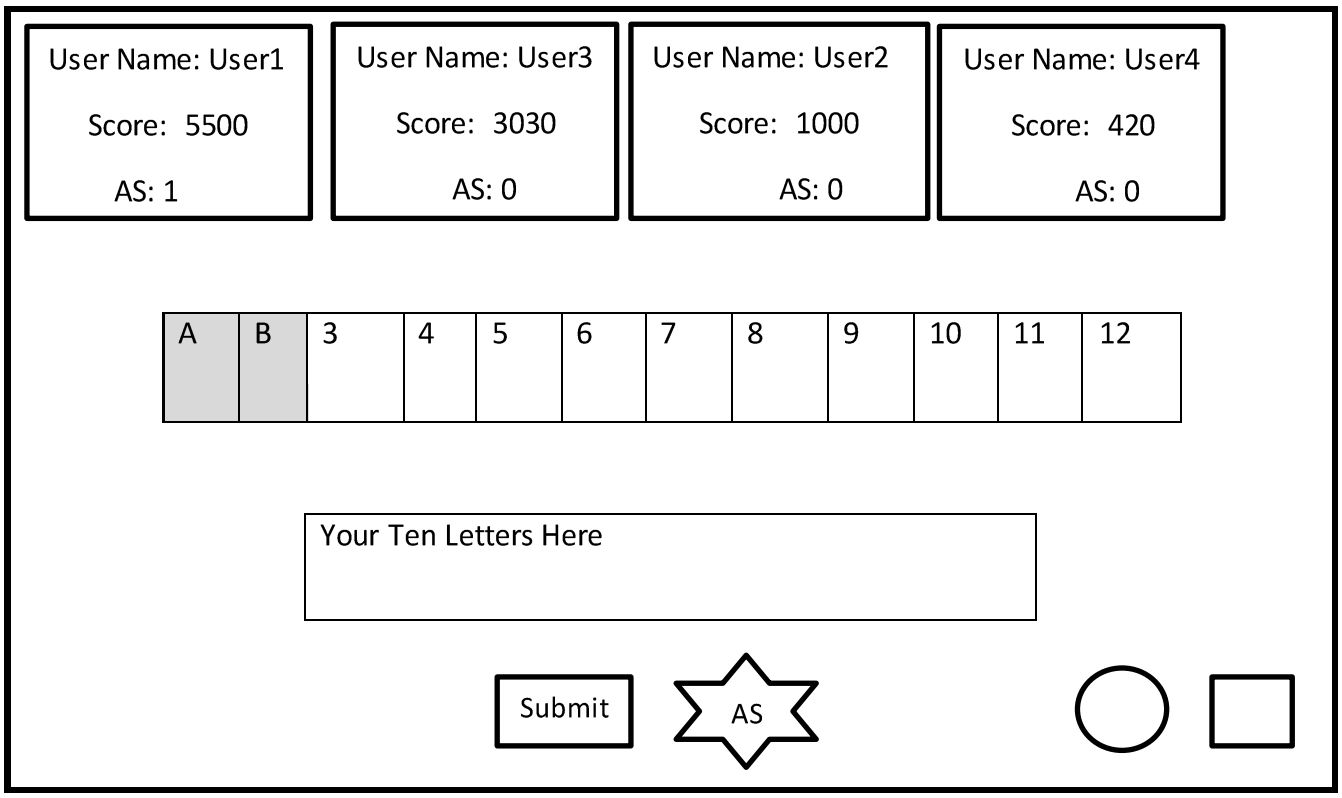
Resume Join

Game Screen



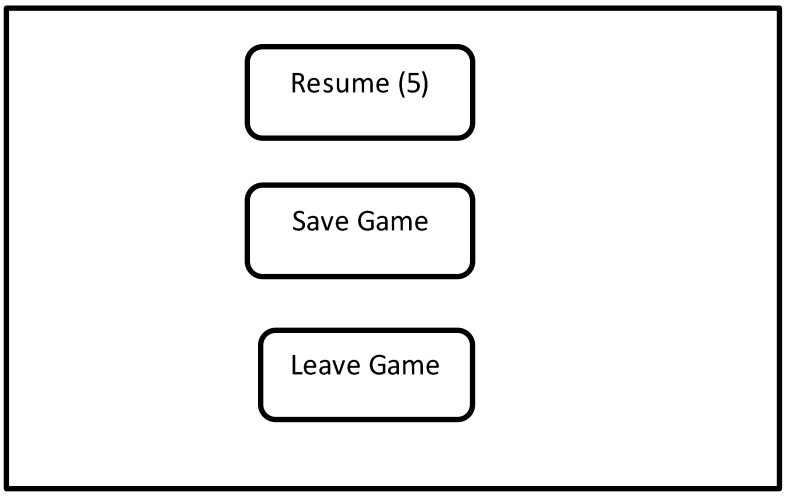
Description: User with Highest score is shown at the top left corner, with change of highest scored player detail rectangle (username and score, number of automatic searches) of highest scored player is moved to the top left corner. If there are even score all are placed to left to right in starting from the top left corner. Highest scored player/s detail background (rectangle) is shown in gold color. Player detailed rectangles are arranged from left to right, according to the descending order of player scores. Current player detailed rectangle is highlighted with a different color.

Circle: represent a button which allows muting or unmuting game music.

Square: represents a button which allows you to access game pause menu.

Star: represents a button which allows you to use the auto search (AS) option if available.

Pause Screen



Scoring System

Outside the normal values given for the letters following bonuses are given to players if they satisfy certain conditions.

Time Bonus: Since each player is given a fixed time (180 seconds) to build a word manually, each player is given bonus points if he/she builds and submits a word early. Bonus points are calculated based on number of remaining seconds. (This is bonus only applies for manual builds)

Power Bonus: In twelve letter board, powers are place on the board randomly which will double or triple the value of the letter. These powers are placed randomly and powers are only placed from 6^{th} letter position on the board (word longer than 5 letters). This is done to ensure person, who create long word score higher than others.

Word Length Bonus: Players who create longer words get bonus points according to length of the word that they have created. This word length bonus also given to players who build a word, that is longer than five letters.

Trophy cabinet: Here there is a trophy cabinet which is personal to each player and you can access it from the main menu stats option. But initially all of the trophies are locked. To unlock those trophies user have to reach certain milestones.

Ex: When you create 12 letter word, it will unlock a trophy.

When you play the 10 games until the end of 3 rounds it will unlock a trophy.

Punishment: At the end of each round, weakest player/s is given three options. These options contain three ratios which will damage the weakest link player's total score. These three options are jumbled each time when they are presented to a weakest link.

Auto Search (AS): Initially every player is provided with one chance to use the auto search. Other than that every player can earn auto search chances when they reach certain milestone in their round score.

Ex: round score = 1000, round score = 3000

Additional Game Features (Features that are implemented later after some critical testing. Look at the gnat chart)

- Animated GUIs
- Game music.
- Website using JSP for sign in, sign up and downloads.
- Facebook Invites: This will allow player to notify their Facebook friends that they are playing this game. This is done in order to attract more people to the game.

Key Issues & approach to solve

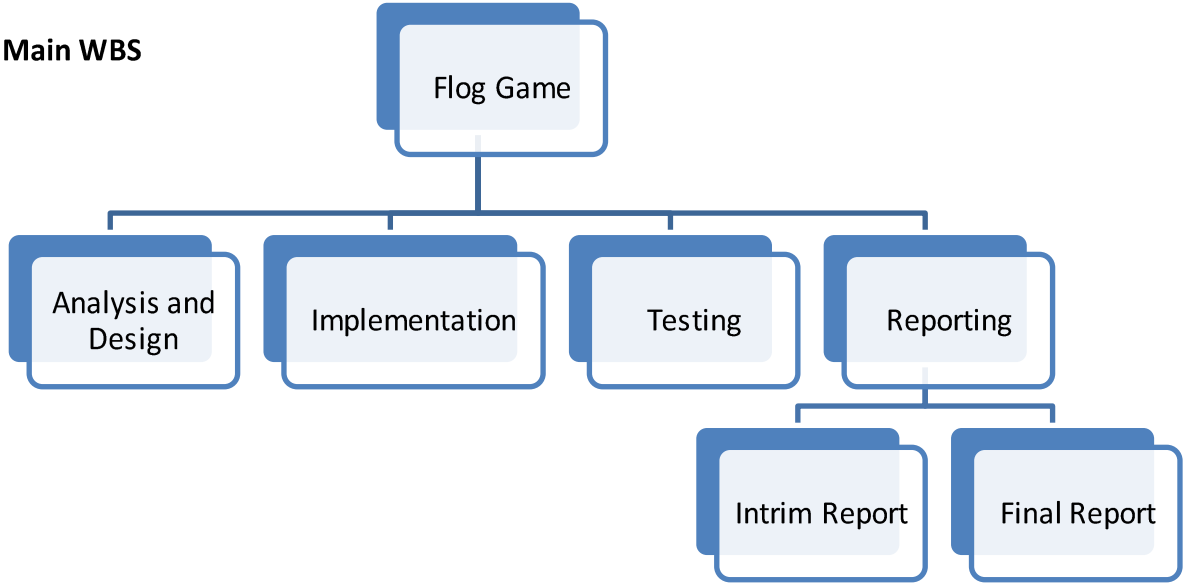
Key Issue	Approach to solve	What is solved?
How to contact players online?	When creating a new game, user is allowed to add three other players to their game	Only players who are not engaged in any game are made available to add

	group. These players should be selected from a list of online players. This list consists of players who are currently signed in to the server but not engaged in any game. *Note*: Look at the New Game screen for better understanding.	for a new game.
How to interrupt the game &continue later (Saving and resuming)?	Game can be interrupted while playing. But there is a condition to satisfy. • To be able to save the game and resume later. Other players of the game should also agree to save the game and continue later. Other player are notified when a player choose to save the game. Other player can either accept or deny the request. If other do not agree player have two choices either to continue playing or leave the game. Leaving the game results to remove the player from the game group and exit from the current game to main menu. *Note:* Look at the Pause screen for better understanding.	This avoid player skipping rounds. Ex: If we allow a player to save game and let others to play. And allow the game saved player to join again. • So player who saves the game and join later would gain unfair advantage. Because when s/he joins some round may be finished and already some player has been punished due to becoming the weakest link. • Player who resumes the game after saving will definitely get punished due to low score. • Since winner is chosen from the highest total score at the end of three rounds. Player who saves the game will delay (or never) announce of the winner.
How to resuming a game after saving?	To resume a saved game, at least one player who was in that game should be present online and currently that player should not be engaged in any game. Note: Look at the Join Game screen for better understanding.	Single player cannot resume the game.
How to pause the game while playing?	You can access the pause menu by clicking the pause button in game window. But it have a limitation, as soon as you click the pause menu, a countdown timer is started (5 seconds). Within that time you can choose an option in the pause menu. But when you make a pause. 20 seconds are reduced from your manual word search time (180s). If you do not choose any option in pause menu within that time game is resumed with reduced time. Note: Look at the Pause screen for better understanding.	Minimize delay of announcement of weakest link of a round or the winner/s of a game play and encourage players to be in the game continuously.

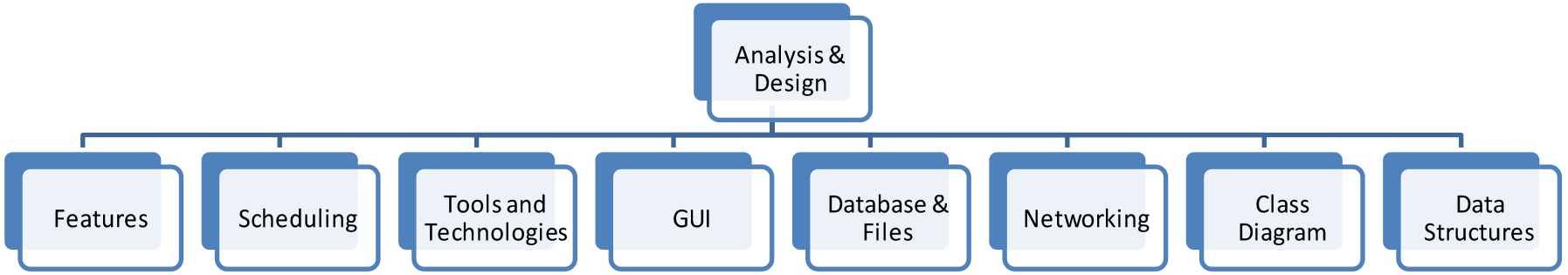
Note: To take a look at all screens, database design and ongoing implementation click here

Work Breakdown Structures (WBS)

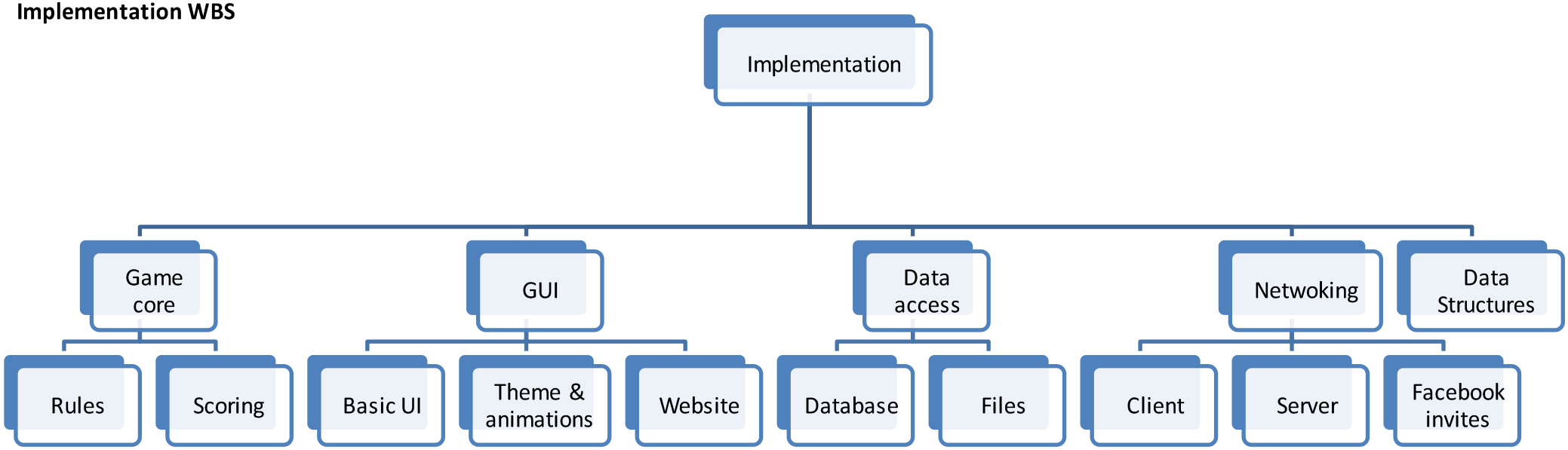
Main WBS



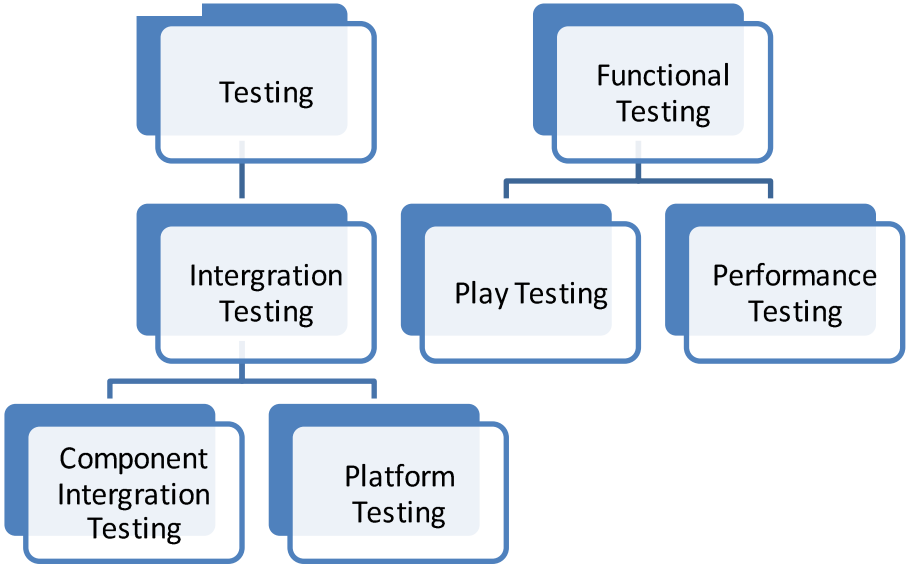
Analysis & Design WBS



Implementation WBS



Testing WBS



Note: Main WBS diagram is broken down into three other diagrams as follows.

- Analysis and Design WBS diagram
- Implementation WBS diagram
- Testing WBS diagram

For the easy representation.

Detailed WBS & Team member assignment

Work Package	Components	Tasks	Responsibility	Duration (hours)	Deliverables	Assigned team members
Analysis and Design (WBS 1)	Features	Discussion on fixed rules of the game (Activity 1.1)	Making sure everyone understand the fixed rules of the game	3	Everyone clearly understand fixed rules of the game	All members
		Discussion on new features (Activity 1.2)	Brainstorming and deciding new features for the final implementation game	2	New features of the game	
	Schedule	Making the schedule (Activity 1.3)	Identifying list of jobs, time duration for each job and assigning jobs to members	2	Project Schedule	
	Technologies & tools	Discussion on tools and technologies that will be used for the project. (Activity 1.4)	Choosing a set of tools & technologies everyone familiar with.	30 minutes	Commonly agreed set of tools and technologies.	
	GUI	Designing wireframes for GUIs.(web and desktop) (Activity 1.5)	Designing attractive, simple GUIs.	3	GUI wireframes	A G Kaushalya Pradeep
		Designing theme for UI (Activity 1.6)	Designing colors, shapes and etc. for the theme	15 minutes	Theme Design	M Hansini K Gunasena D A L Vijitha Kumari
		Designing animations (Activity 1.7)	Designing animations for the appropriate places of game.	15 minutes	Animation designs and places of them.	Ranasinghe R A Buddhima T Angana Janani Rathnayake
		Designing sounds for the game	Designing background music, game music, UI music for the game.	15 minutes	List of music for the game.	Ranasinghe R A Buddhima T

		(Activity 1.8)				
	Database & files	Designing ER for the database (Activity 1.9)	Deciding the database tables that are needed and their relationships	1	ER diagram	A G Kaushalya Pradeep
		Designing files for game. (Activity 1.10)	Deciding the file type & their content use to store game data.	15 minutes	File design for game.	A G Kaushalya Pradeep
	Data Structures	Selecting data structures (Activity 1.11)	Deciding data structures that will be used for specific operations in the game.	1	Efficient data structures & their usage that will be used to implement the game.	Ashain Sumendra De Silva
	Class Diagram	Making the class diagram (Activity 1.12)	Designing foundation packages, classes, class attributes, methods for implementation	4	Class diagram	A G Kaushalya Pradeep
	Networking	Selecting network model for the project (Activity 1.13)	Agreeing on what model to use for the game? client server or P2P	20 minutes	Network model that will be used for the project	A G Kaushalya Pradeep Ashain Sumendra De Silva
Implement-ation (WBS 2)	Game Core	Implementing rules (Activity 2.1)	Implementing methods for fixed rules of the game and rules of newly added features	8	Functioning methods for all game rules	A G Kaushalya Pradeep
		Implementing scoring system (Activity 2.2)	Implementing methods to update player scores.	8	Functioning methods for the scoring system of the game	A G Kaushalya Pradeep
	Data Structures	Implementation of data structures & algorithms (Activity 2.3)	Implementing customized data structures & algorithms for better performance	5	Efficient data structures and algorithms for better performance	Ashain Sumendra De Silva
	GUI	Implementation of Basic UI (Activity 2.4)	Implementing GUIs according to wireframes designed	12	Implemented basic UI	Ranasinghe R A Buddhima T Angana Janani Rathnayake D A L Vijitha Kumari M Hansini K Gunasena
		Implementation of theme and	Implementation of common theme to UI & applying it	4	Theme for and animations for all GUIs.	M Hansini K Gunasena D A L Vijitha Kumari

		animations. (Activity 2.5)				Angana Janani Rathnayake
		Implementation of methods to produce music(Activity 2.6)	Implementation of methods for producing background, UI & game music.	2	Functioning methods to produce sounds.	Ranasinghe R A Buddhima T
		Implementation of website. (Activity 2.7)	Implementation of web pages for sign up, sign in and downloads.	4	Functioning web site that enables sign in, sign up and downloads.	Ranasinghe R A Buddhima T M Hansini K Gunasena D A L Vijitha Kumari Angana Janani Rathnayake
	Data access	Implementation of database methods(Activity 2.8)	Implementation of database methods for basic database operations.	12	Functioning methods for database operations	A G Kaushalya Pradeep Ranasinghe R A Buddhima T
		Implementation of file handling methods (Activity 2.9)	Implementation of file handling method to work with files.	2	Functioning file handling methods	A G Kaushalya Pradeep
	Networking	Implementing server side (Activity 2.10)	Implementation of methods to process client requests.	24	Functioning methods to process client requests	A G Kaushalya Pradeep
		Implementing client side (Activity 2.11)	Implementation of methods to make requests to the server	24	Functioning methods to make client requests	Ashain Sumendra De Silva
		Implementing Facebook app invites feature (Activity 2.12)	Implementation of methods to make Facebook app invites	5	User can invite Facebook friends to the game.	M Hansini K Gunasena
Testing (WBS 3)	Integration testing	Carrying out component integration testing(Activity 3.1)	Testing should be done in order to ensure integration among system components produce desired output.	10	System components that can work with each other.	A G Kaushalya Pradeep Ashain Sumendra De Silva

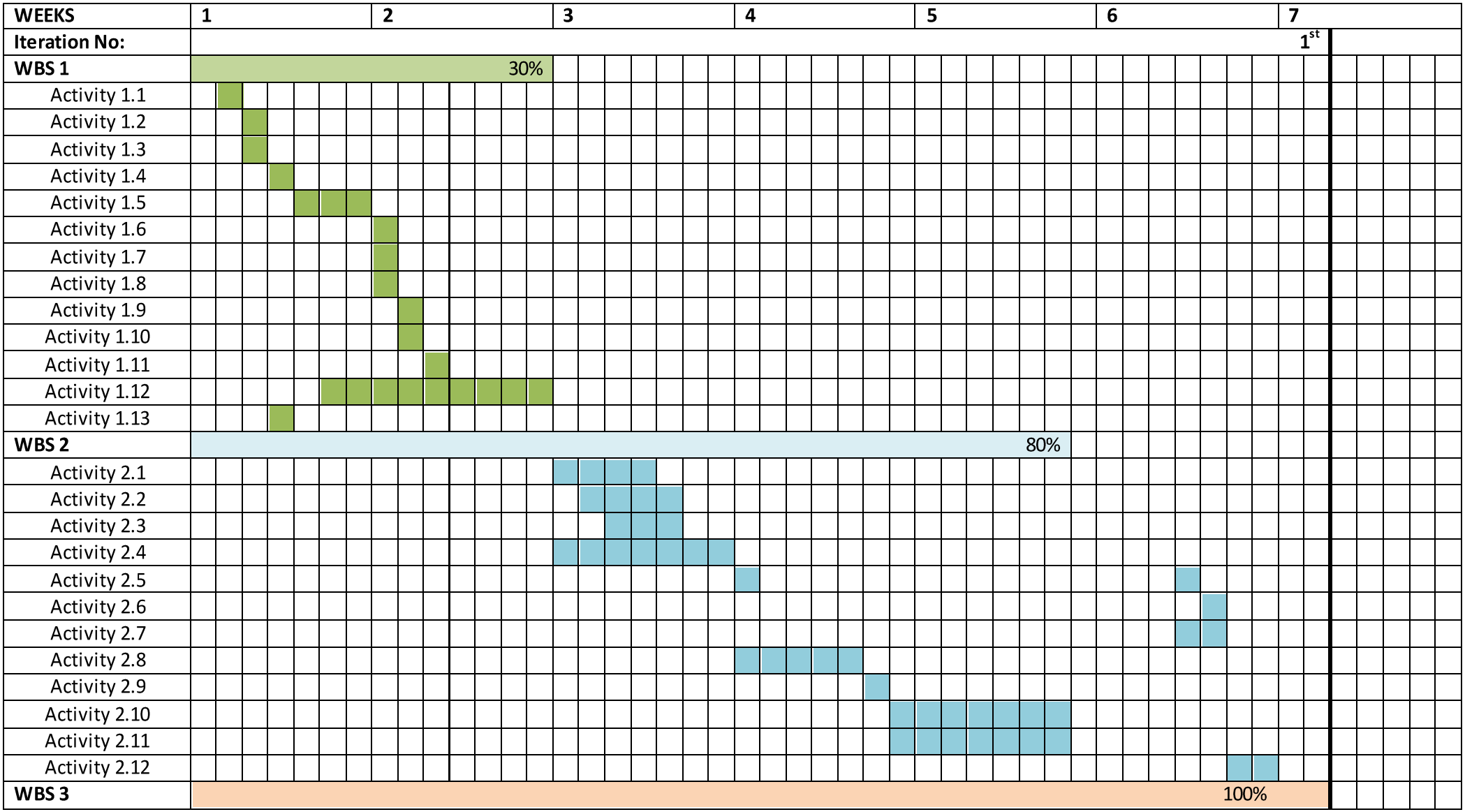
		Carrying out platform tests (Activity 3.2)	Testing the system for different Operating systems.	3	Game that can runs on many Operating systems.	A G Kaushalya Pradeep
	Functional testing	Carrying out functional tests (Activity 3.3)	Testing different features of the game to ensure that they produce desired output.	5	Functioning features of the game.	All members
	Game play testing	Carrying out game tests (Activity 3.4)	Testing the overall system by playing the game.	12	Enjoyable game.	All members
	Performance testing	Carrying out performance tests. (Activity 3.5)	Testing the game performance by time stamping.	4	Smooth game play.	A G Kaushalya Pradeep Ashain Sumendra De Silva
Reporting (WBS 4)	Interim Report	Report sketch (Activity 4.1)	Preparing sketch of the report and publishing it to Google docs to fill in.	30 minutes	Interim Report	Maintained by D A L Vijitha Kumari
		Filling the report(Activity 4.2)	Filling the relevant parts of the report by members.	6		
		Finalizing (Activity 4 .3)	Proof reading and making corrections	1		
	Final Report	Report sketch (Activity 4.4)	Preparing sketch of the report and publishing it to Google docs to fill in.	1	Final Report	Maintained by Angana Janani Rathnayake
		Filling the report (Activity 4.5)	Filling the relevant parts of the report by members.	10		
		Finalizing (Activity 4.6)	Proof reading and making corrections	2		

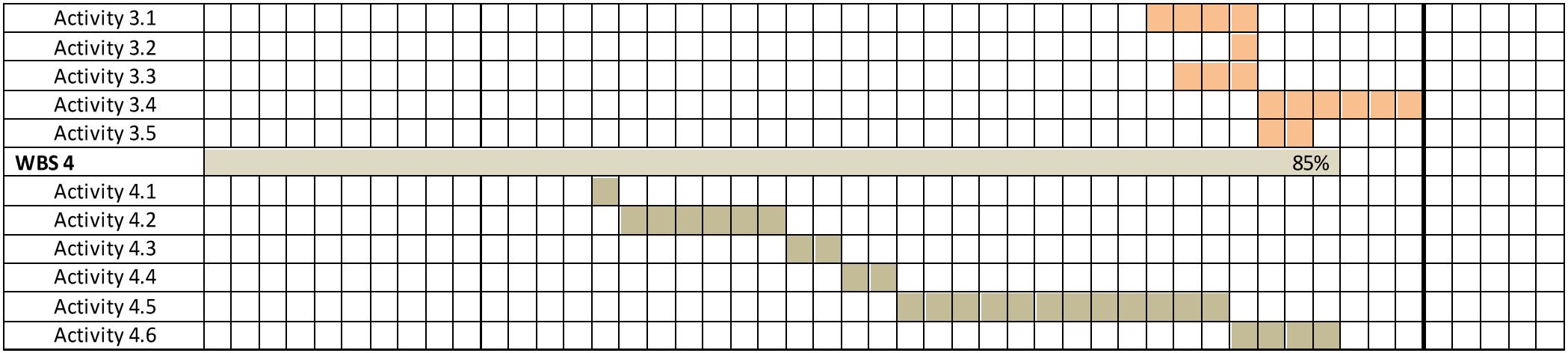
Note:

- Unit testing is not mentioned in WBS, since it is carried out with the implementation.
- Deployment is not mentioned since it is done for testing.
- Sound is including under GUI since it is a part of the GUI.
- Bug fixing is not mentioned, since it is done soon after the identification of bugs by testing.

Schedule

Gnat chart





Reporting structure

How is communication maintained?

First 2 weeks: Face to face meetings.

Last 4 weeks: Google group hangouts (Video & text), emails, phone calls.

(Reason for not having face to face meeting in last 4 weeks: Members are scattered in two distanced cities.)

How progress is measures along with the time?

In Design and analysis: Number of final decisions are made and number of success designs completed.

In implementation: Number of unit implemented along with the unit testing. (Monitored via GitHub)

In testing: Number of successive tests carried out.

In reporting: Up to how much extends report have been filled.