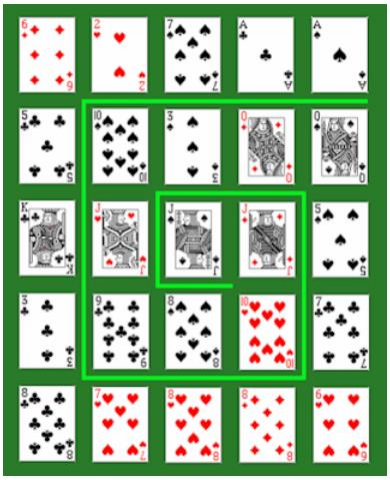
Middlesex University London

Module Title: Software Development
Module Code: CST4010
Module Leader: Dr. Carl Evans

Sprint #3

Group B

Game Name: Snail Space



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1. Retrospective

In sprint 2, we implemented the game so that each player inputs their scores as a number, and the other player can approve or reject it. The feedback suggested creating a dropdown list or any list from which a player could choose the scoring, such as pair, prial, double pair royal and etc. This approach would not only include, display, and calculate the score but also show the reason for the score to the other player. Consequently, the reason becomes obvious, eliminating the need for further explanation to the other player. This enhancement would significantly improve performance and streamline the game, making it easier and faster.

The other logics of the game were implemented correctly, and we were able to implement all the customizations related to sprint 2, such as the dark theme and winning animation. There were no tasks remaining from sprint 2 that needed to be completed in sprint 3.

2. All Product backlog

ID	Title	As a ...	I want to ...	So that...	Priority	Sprint
1	Shuffle deck	System	Shuffle deck of 52 cards	I give random cards to players	Must	1
2	Choose a variant	Player	Choose the variant of game	I can know how I should play and calculate the scores	Must	1
3	Set up a round	System	Set up the cards	I can start a round between two players	Must	1
4	Players hand	Player	See my card in each round	I can make any informed decision during the game	Must	1
5	Make a move	Player	Put a selected card in the grid	I can increase my score	Must	1
6	Calculate round scores	System	Calculate the scores after each move	I can add them to the total game score	Must	1
7	Store the scores	System	Store the scores	I can calculate the final scores	Must	1
8	Announce the winner	System	Compare the scores	I can announce the winner	Must	1

9	Score board	Player	Be able to see my current score and the score of my opponent	I can strategize my next move	Should	1
10	Basic GUI Design	Player	I want to interact with a visually appealing and intuitive GUI	I can easily navigate through game menus, settings, and gameplay features.	Must	2
11	Game Variant Selection in GUI	Player	I want to choose the variant of the game through the GUI	I know how to play and how I should calculate my score	Must	2
12	Card Display in GUI	player	I want the cards to be visually represented on the GUI during gameplay	I know what card I should choose	Must	2
13	Card Selection in GUI	Player	I want to visually select cards from my hand	I can place them on the main card grid and keep on playing	Must	2
14	Score Claim Popup	System	I want to show a popup after placing a card	players can input their claimed score	Should	2
15	Score Approval Popup	System	I want to show a popup to approve or reject the score	The players can approve or reject their opponent's score	Should	2
16	Continuous Score Display	Player	I want the current scores of both players to be displayed continuously on the GUI	I know how does the game go and which card I should play	Should	2
17	Round Transition Animation	System	I want a visually appealing transition between rounds	I indicating the start of a new round	Should	2
18	End the game	System	Initiate the game-ending process	I can conclude the ongoing sessions, calculate final scores and declare the winner	Must	2
19	Game Over Winning Animation	System	I want to show a celebration animation	After ending the game the winner's name will be displayed	Could	2
20	Choose a name	Player	Choose a nickname	I am distinguished from another player by name	Could	2
21	Restart a game	Player	Request to restart the game	I start a new game	Could	2
22	Design customization-Dark theme	Player	Have a user friendly interface	I can have a better gameplay experience	Could	2
23	Improve GUI Layout	Player	I want a more user-friendly and visually appealing GUI layout	I can play in a more professional	Should	3
24	Automatic Scoring	Player	I want my score to be calculated	I can see the result of two players' moves	Must	3
25	AI Player Logic Enhancement	System	I want the computer opponent to employ intelligent moves	The game could become more competitive	Could	3
26	Highlight the legal moves	System	Show the legality of players movement	I can show the position of next card to the player	Could	3

27	Set a time limitation for a round	System	Set a maximum time for each player	I can manage a time of a game with time limitation	Should	3
28	Warning time limit	System	Let players know how much time is left in each round	They understand the time limit and make a quick decision	Could	3
29	Game sound	Player	Be able to mute/unmute game sounds	I can control my game environment	Could	3
30	Game guide	System	Provide an accessible and clear rulebook within the game interface	Players are aware of the game rules	Could	3
31	Difficulty Level Selection	Player	I want the option to choose different difficulty levels	I challenge myself by playing this game	Should	3

Table 1-Product Backlog

3. Sprint 3 Goal

The sprint 3 goal is to deliver graphical user interface for the snail space game for human versus computer (AI) version.

4. Sprint 3 backlog with story points

Team 1: Adil and Elaheh

Team 2: Nina and Morvarid

Backlog item	Story points	Developer
Improve GUI Layout	11	
Design updated GUI layout mockups based on feedback.	3	Team 1
Implement updated GUI layout design in the game interface.	8	Team 1
Automatic Scoring	18	
Define scoring rules and criteria for the game.	3	Team 2
Develop algorithms to calculate scores automatically.	5	Team 2
Implement scoring logic into the game backend.	8	Team 2
Test automatic scoring functionality under various scenarios.	2	Team 2
AI Player Logic Enhancement	15	
Analyze current AI player logic and identify areas for improvement.	2	Team 2
Research and implement advanced AI techniques to enhance gameplay and decision-making for AI players.	3	Team 1

Test AI player enhancements in simulated game environments to evaluate performance.	2	Team 2
Integrate enhanced AI logic into the game system and verify compatibility with existing features.	8	Team 1
Highlight the legal moves	4	
Implement visual indicators to highlight legal moves to the player.	2	Team 1
Test legal move highlighting functionality across different game scenarios.	2	Team 2
Set a time limitation for a round	6	
Define round duration and time limitation rules.	1	Team 1
Implement a countdown timer feature for rounds in the interface.	3	Team 1
Test time limitation functionality to ensure accurate countdown and enforcement of round duration.	2	Team 2
Warning time limit	11	
Determine the duration of the warning time limit before the main time limit expires.	1	Team 1
Implement a notification system to alert players when they are approaching the time limit.	3	Team 1
Test warning time limit notifications to ensure they are timely.	2	Team 2
Integrate warning time limit functionality with the overall time limitation feature.	5	Team 1
Game sound	6	
Compile a list of sound effects for the game theme.	2	Team 1
Implement sound effects for key game actions such as card shuffling, dealing, and gameplay events.	3	Team 1
Allowing players to toggle the sound on/off.	1	Team 1
Game guide	5	
Outline the content and structure of the game guide, including rules, gameplay mechanics, and tips.	2	Team 2
Write clear explanations for each aspect of the game.	2	Team 2
Put the game guide in a menu.	1	Team 2
Difficulty Level Selection	10	
Define the different difficulty levels available in the game and determine their corresponding characteristics.	5	Team 1
Develop a user interface for players to select their preferred difficulty.	2	Team 1

Test difficulty level selection functionality to ensure smooth transitions between levels and proper adjustment of game difficulty.	3	Team 2
	86	

Table 2-Sprint 3 backlog

5. Burn-up chart

Figure 1-Burn-up Chart

In the third sprint, we focused on designing a Graphical User Interface (GUI) for the human versus computer version of the Snail Space game. This phase consisted of 28 tasks totaling 86 story points. A burn-up chart is provided, depicting the number of story points in work units, utilizing both a blue and an orange line. The former represents the real number of story points, while the latter shows the scope line. Every interval on the horizontal axis corresponds to a standardized unit of time, where each unit equals one hour, we encountered a total of 127 work units required to complete the tasks. Identifying and understanding the varying levels of difficulty among tasks enabled us to manage effectively and prioritize our efforts accordingly. For instance, integrating enhanced AI logic into the game system and verifying compatibility with existing features (8 story points, 10 work units) presented a significant challenge due to its technical complexity and the necessity for a comprehensive understanding of game mechanics.

The progression of story points commenced from zero, with nearly four story points accomplished within the initial five working units. Between the 15th and 25th work units, five tasks were successfully completed. Progress continued steadily, with approximately one or two tasks finished between each set of five work units. However, there were notable absences of task completion during working units 70 to 75 and between working units 115 and 120. The chart consistently depicted a stable trend without significant fluctuations until reaching the milestone of 127 working units, where 86 story points had been achieved.

Throughout the sprint, we tracked our progress using a burn-up chart, which provided valuable insights into completed tasks against the sprint timeline. The chart demonstrated steady progress, with tasks being completed as per the sprint plan, ensuring timely delivery of the end-of-sprint increment.

6. Meeting sessions

Meeting 1

Date: 19/03/24	**Meeting 1**	**Time: 15:00**
Duration: 1 Hour		**Participants: All**
Description: In our first meeting, we collaboratively listed tasks for our backlogs and distributed them among team members. We discussed feedback concerning the game design for human versus human mode (sprint 2) and agreed to make updates about revising the score input implementation, once all sprint 3 tasks are completed. During the meeting, we delved into the GUI and calculation implementation specifics.		
Adil	To Do: Design and implement updated GUI layout	
Elaheh	To Do: Test GUI layout	
Morvarid	To Do: Implement scoring logic	
Nina	To Do: Implement and test scoring logic	

Table 3-Meeting 1

Meeting 2

Date: 22/03/24	Meeting 2	Time: 19:00
Duration: 40 minutes		Participants: All
Description: Together, we reviewed the GUI, and with the time remaining, we discussed the incomplete prial scenario that team 2 couldn't complete. We reached a solution and agreed to address it before the next meeting, which is approximately in 7 days.		
Adil	Progress: Design and implement updated GUI layout	
	To Do: Research and implement advanced AI techniques/ Implement highlight legal moves	
	Blocker(s) : None	
Elaheh	Progress: Test GUI layout	
	To Do: Research and implement advanced AI techniques	
	Blocker(s): None	
Morvarid	Progress: Implement scoring logic	
	To Do: Correct the scenario of prial scoring logic	
	Blocker(s): Calculation in one scenario of prial was wrong	
Nina	Progress: Implement and test scoring logic	
	To Do: Test highlighting legal moves	
	Blocker(s): Calculation in one scenario of prial was wrong	

Table 4-Meeting 2

Meeting 3

Date: 30/03/24	Meeting 3	Time: 19:00
Duration: 15 minutes		Participants: All
Description: The process of computing the prial was completed successfully, and we collaborated to verify both the calculation and the highlighting feature. Following that, we strategized and evaluated the display of time limitation and warning.		
Adil	Progress: : Research and implement advanced AI techniques/Implement highlight legal moves	
	To Do: Implement time limitation and countdown timer	
	Blocker(s): None	
Elaheh	Progress: : Research and implement advanced AI techniques	
	To Do: Implement warning time limit	

	Blocker(s): None
Morvarid	Progress: Correct the scenario of prial scoring logic
	To Do: Test time limitation
	Blocker(s): None
Nina	Progress: Test highlighting legal moves
	To Do: Test warning for time limitation
	Blocker(s): None

Table 5-Meeting 3

Meeting 4

Date: 04/04/24	**Meeting 4**	**Time: 19:00**
Duration: 15 minutes		**Participants: All**
Description: We saw the progress together and plan for the next tasks which was implementing the sound effects and game guide.		
Adil	Progress: Implement time limitation	
	To Do: Implement sound effects	
	Blocker(s): None	
Elaheh	Progress: Implement warning time limit	
	To Do: Implement sound effects	
	Blocker(s): None	
Morvarid	Progress: Test time limitation	
	To Do: Design a game guide	
	Blocker(s): None	
Nina	Progress: Test highlighting legal moves	
	To Do: Design a game guide	
	Blocker(s): None	

Table 6-Meeting 4

Meeting 5

Date: 08/04/24	**Meeting 5**	**Time: 19:00**
Duration: 30 minutes		**Participants: All**
Description: The sound effects for the game were successfully implemented, and we completed the game guide. We planned for Team 1 (Adil and Elahe) to work on implementing the difficulty levels for the game, if possible. Additionally, Adil was tasked with correcting the display of score claiming for sprint 2. We also outlined plans for documenting sprint 3 and preparing the software guide document for submission.		
Adil	Progress: Implement game sound	
	To Do: Implement Difficulty Level / Correct claiming the scores in sprint 2 step of the project	
	Blocker(s): None	
Elaheh	Progress: Implement game sound	
	To Do: Implement Difficulty Level / prepare software guide	
	Blocker(s): None	
Morvarid	Progress: Design a game guide	
	To Do: Create document of sprint 3	
	Blocker(s): None	
Nina	Progress: Design a game guide	
	To Do: Create document of sprint 3	
	Blocker(s): None	

Table 7-Meeting 5

Meeting 6

Date: 10/04/24	**Meeting 6**	**Time: 10:00**
Duration: 1:30		**Participants: All**
Description: The documents were prepared, and we completely reviewed them together. However, we were unable to finish the revisions in sprint 2. Since the deadline is April 18, we've opted to address them at a later time.		
Adil	Progress: Implement Difficulty Level	
	To Do: Submit the whole ZIP file	
	Blocker(s): Time limitation for correcting the claiming scores in sprint 2 step of the project	
Elaheh	Progress: : Implement Difficulty Level	
	To Do: Implement advanced difficulty level	
	Blocker(s): Prioritizing the card for maximizing scores in advanced level was wrong	
Morvarid	Progress: Create document of sprint 3	
	To Do: None	
	Blocker(s): None	
Nina	Progress: Create document of sprint 3	
	To Do: None	
	Blocker(s): None	

Table 8-Meeting 6