Product requirements

This page clarifies all the functional (including optional ones) and non-functional requirements and linking them to the user stories.

📝 All User Stories

Sprint	User Stories
Sprint 1: Functional Requirements	**FUS-01**: As a child, I want to interact with buttons on the screen to navigate to corresponding screens effortlessly. **FUS-02**: As a child, I need clear descriptions of what each button does so I can make informed choices during navigation. **FUS-03:** As a child, I want to be able to hear the voice instruction so that I can follow instructions clearly. **FUS-04**: As a teacher, I need to adjust the number of levels available to students, allowing for a single-level gameplay when necessary. **FUS-05**: As a child, I want to retrieve my account and ID automatically or select my name from a list on the screen to enter the game without the need for typing. **FUS-06**: As a child, I need to view instructions before starting the game to understand the gameplay thoroughly. **FUS-07**: As a child, I wish to have the option to correct mistakes in the pattern I draw to ensure the accuracy of my answers. **FUS-08**: As a child, I want to draw patterns on the right-hand side of the screen for a user-friendly experience. **FUS-09**: As a child, I need a confirmation button to proceed to the next level after completing a pattern. **FUS-10**: As a child, I would like to to rub and clear anytime during the test. **FUS-11**: As a child, I'd like to redo a pattern on a second attempt to earn partial credit. **FUS-12**: As a child, I want to progress to the next level seamlessly by clicking a dedicated button. **FUS-13**: As a child, I wish to see a completion page after finishing the game to confirm the end of the activity. **FUS-14**: As a student, I want the app to be available on both iOS and Android platforms, ensuring device compatibility.

	- **FUS-15**: As a test taker, I need the app to be accessible on any device, allowing me to take the test with whatever device I have.
	- **FUS-16**: As a member of the research team, we need children to use the app under teacher supervision to ensure the test is taken seriously.
	- **FUS-17**: As a test provider, I want to verify that every task within the app is implemented correctly to gather accurate and useful results.
	- **FUS-19**: As a statistician, I want to receive data from a well-defined marking system, ensuring that my analysis yields meaningful insights.
	- **FUS-20**: As a member of the development team, we need to store results after tasks are completed for future data analysis.
	- **FUS-21**: As a participant with no prior exposure to such tests, I want clear voice or video instructions to guide me through the game and task steps for optimal performance.
	- **FUS-22**: As a member of the research team, we desire additional data beyond test scores, such as the time taken to complete the test, for a more comprehensive study.
	- **FUS-23**: As a participant, I want to engage in simple practice before the formal test to better understand the forthcoming tasks.
	- **FUS-24**: As a child, I want to draw the pattern in separate segments.
Sprint 2: Non-Functional Requirements	- **NFUS-01**: As a child between 5-12 years old, I want an app with an engaging interface and straightforward instructions to maintain my interest and facilitate ease of use.
	- **NFUS-02**: As a product owner, I want the app to support extensions to incorporate new features, such as additional question banks or testing systems, in the future.
	- **NFUS-03**: As an app user, I expect quick page load times to access content without delay.
	- **NFUS-04**: As a user, I need the app to display correctly on any device screen for an optimal user experience.
	- **NFUS-05**: As a user, I want my personal information and test scores to be secure to ensure my privacy and safety while using the app.

📝 Functional requirements

Screen	User Stories

Lobby	**FUS-01**: As a child, I want to click buttons on the screen so that I can navigate to corresponding screens.
	FUS-02: As a child, I want to know what those buttons are used for so that I know which one to click.
Setting	**FUS-04**: As a teacher, I want to use a button to control the number of levels so that I can set the game to only have one gameplay level.
Account	**FUS-05:** As a child, I want to retrieve my account and ID automatically or select my name from a list on the screen to enter the game without the need for typing.
Gameplay	**FUS-06**: As a child, I need to view instructions before starting the game to understand the gameplay thoroughly.
	FUS-03: As a child, I want to be able to hear the voice instruction so that I can follow instructions clearly.
	FUS-10: As a child, I would like to to rub and clear anytime during the test.
	FUS-08: As a child, I want to draw patterns on the right-hand side of the screen for a user-friendly experience.
	FUS-09: As a child, I need a confirmation button to proceed to the next level after completing a pattern.
	FUS-11: As a child, I'd like to redo a pattern on a second attempt to earn partial credit.
	FUS-12: As a child, I want to progress to the next level seamlessly by clicking a dedicated button.
	FUS-13: As a child, I wish to see a completion page after finishing the game to confirm the end of the activity.
	FUS-24: As a child, I want to draw the pattern in separate segments.

Other requirements

Requirements	User stories	Importance	Explanation
Make available apps on both iOS and Android platforms	**FUS-14**: As a student, I want the app to be available on both iOS and Android platforms, ensuring device compatibility.	High	React native can satisfy this but we finally chose Vue to develop a web app.
Make available apps on any devices including phone, tablet, and PC	**FUS-15**: As a test taker, I need the app to be accessible on any device, allowing me to take the test with whatever device I have.	High	Required by client, that's one of the reason we decide to develop a web app.
QR code scanner to load children's accounts of one class	**FUS-05**: As a child, I want to retrieve my account and ID automatically or select my name from a list on the screen to enter the game without the need for typing.	High	After communicating with backend groups, we chose QR code as information pack for a class.
Children can not access the test in the app without the permission of their teachers	**FUS-16**: As a member of the research team, we need children to use the app under teacher supervision to ensure the test is taken seriously.	High	If some naughty children start a test but just play it for fun, then those test results are not valuable to

			study. We would apply a verification system.
Run all the tasks in the question bank correctly	**FUS-17**: As a test provider, I want to verify that every task within the app is implemented correctly to gather accurate and useful results.	High	The game logic may be implemented using lists in Javascript which is quite easy.
Display an instruction for each subtask at transition	**FUS-06:** As a child, I need to view instructions before starting the game to understand the gameplay thoroughly. **FUS-21**: As a participant with no prior exposure to such tests, I want clear voice or video instructions to guide me through the game and task steps for optimal performance.	High	The app will go to next page after an indication of acknowledgement from the child
Children can rub and correct their mistake at any time before the submission	**FUS-10**: As a child, I would like to to rub and clear anytime during the test.	High	This requirement is specified in the appendix.
Test taker can draw the pattern with several segments	**FUS-24**: As a child, I want to draw the pattern in separate segments.	High	Every pattern can be drawn within one stroke but drawing in several segments still needs to follow the direction and order of the pattern.
Allow the test takers to confirm their submission by asking "do you think the pattern looks correct"	**FUS-10**: As a child, I want the opportunity to retry a pattern if I get it wrong.	High	This requirement is specified in the appendix.
Apply reasonable marking schemes	**FUS-19**: As a statistician, I want to receive data from a well-defined marking system, ensuring that my analysis yields meaningful insights.	High	The marking scheme has already been provided in the appendix by Christine.
Store test results with a unique id for each completed test along with the name, age and grade of the tester and send to the backend	**FUS-20**: As a member of the development team, we need to store results after tasks are completed for future data analysis.	High	We need to prepare data for backend which is data analysis.
Voice or video instruction	**FUS-21**: As a participant with no prior exposure to such tests, I want clear voice or video instructions to guide me through the game and task steps for optimal performance.	Mid	Three instructions are needed for copying a pattern, lateral flip, and vertical flip.
Partial mode	**FUS-04**: As a teacher, I need to adjust the number of levels available to students, allowing for a single-level gameplay when necessary.	Mid	Children under 7 yeas old will only do the first level.
[Optimal] Auto timer within the system	**FUS-22**: As a member of the research team, we desire additional data beyond test scores, such as the time taken to complete the test, for a more comprehensive study.	Mid	After reading Christine's paper, we think timing is an element we need to take into consideration.

[Optional] Playground	**FUS-23**: As a participant, I want to engage in simple practice before the formal test to better understand the forthcoming tasks.	Low	Give out some randomly generated simple problems for beginners to practise just like unimelb before the final exam. And the research shows that getting prior experience before playing the game will not affect results.

📝 Non-functional requirements

Requirements	User stories	Importance	Explanation
Elaborate user interface (user experience)	**NFUS-01**: As a child between 5-12 years old, I want an app with an engaging interface and straightforward instructions to maintain my interest and facilitate ease of use.	High	Due to the particularity of our testee, a great effort will be taken to design UI and improve UX.
Future extension	**NFUS-02**: As a product owner, I want the app to support extensions to incorporate new features, such as additional question banks or testing systems, in the future.	Mid	A good software should have extendability.
Fast response time	**NFUS-03**: As an app user, I expect quick page load times to access content without delay.	Mid	An app which is not quite complicated should have good performance.
Responsive design	**NFUS-04**: As a user, I need the app to display correctly on any device screen for an optimal user experience.	Mid	A good software should behave well on different configurations.
Privacy	**NFUS-05**: As a user, I want my personal information and test scores to be secure to ensure my privacy and safety while using the app.	High	All data transmission will be over HTTPS, at front end, never display test score.