الملف مشروع تصميم واجهة مستخدم Project Stream 1

موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الثاني عشر ⇦ تصميم ⇦ الفصل الأول

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STREAM Project 1
Design a Graphical User Interface

My STREAM focus:

- **Science:** apply the principles of computer sciences to create, program, evaluate, and test mobile applications
- **Technology:** use mobile app development software
- **Reading:** use different types of research to analyse the given brief and aid in completing the project successfully
- **Engineering:** the engineering design process employed through computer engineering skills and software engineering methodologies to develop the mobile app
- **Art:** create sketches of proposed design ideas and create a user interface that is suitable for the targeted audience
- **Maths:** dimensions and measurement of different controls when designing the user interface

Engineering Design Process

Stage 1: The design brief

Stage 2: Analysing the brief

Stage 3: Research and Investigation

Stage 4: Possible solutions

Stage 5: Final solution

Stage 6: Design Realisation

Stage 7: Evaluation

STREAM Project 1: Design a Graphical User Interface

Aim

This section of the workbook aims to provide activities that assess the understanding of the topics covered in the student book and skills guide. This section will provide activities to evaluate your understanding of GUI design and mobile app software and its different controls to design and deploy a mobile application. It will also provide an entrepreneurial outlook to the project that combines all areas of STREAM and the entrepreneurial design process to complete the project successfully. To complete the stream project, you must show your understanding of the mobile app designing process by analysing the given brief. You must then solve the project using your knowledge of a graphical user interface and mobile app builder.

Learning outcomes

- Define mobile computing.
- State the advantages and disadvantages of mobile computing.
- Describe the hardware and operating system architectures used in mobile computing.
- Illustrate Human-Computer Interaction (HCI).
- Evaluate different types of HCI.
- Evaluate different HCI designs based on the application.
- Employ the fundamentals of mobile phone design.
- Design a Graphical User Interface.

Prior knowledge

- Programming
- Project methodology
- Testing

My STREAM focus:

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Wellbeing mobile app development
Stage 1: The design brief

The Brief

The novel coronavirus <mark>pandemic</mark> has made the past few months very challenging for all of us. Among all, children and young people were much affected. Due to pandemic breakout, children were not able to attend regular school. This was a very <mark>abnormal</mark> situation. Some students may have enjoyed being off school during this time. However, students studying abroad have had to stay away from their families due to travel <mark>restrictions</mark>. Students might have also come across family issues, loss or changes to their everyday living situation.

The present situation may still lead to many changes. Even though corona infected cases are reduced still, there are restrictions and changes to our everyday lives. Therefore, students have to <mark>adapt</mark> to the new normal condition. While the current situation is different from what they have been experienced before, it is expected to become the new norm.

As a grade 12 Advance CDI Student, you must now apply the skills you have learned in CDI to design a wellbeing mobile app. As a responsible <mark>citizen</mark>, there are ways you can support young children to give them the best chance to stay mentally healthy

when they return to school. Imagine yourself as a mobile app developer trainee and develop a wellbeing mobile app for young students who fall between the group from 8 to 14 years of age. You must design, create, and deploy a digital wellbeing app model using a mobile app builder. Also, as an <mark>entrepreneur</mark>, you should create a business model and prepare to present your idea to <mark>potential investors</mark>.

Your wellbeing mobile app must have the following design features:

- Support students wellbeing when they are back to school for the new academic term.
- Have at least two screens
  - The first screen must be a splash screen
  - The second screen should link to three sub-screens
    1. Sub-screen#1 must store data in the cloud
    2. Sub-screen#2 must use any IoT component and demonstrate its purpose
    3. Sub-screen#3 should display a thankyou message and close the app
- The app should be able to move from one screen to another and execute all functions successfully

Stage 2: Analysing the brief

Activity 1.2.1 T,R

In the space below, list and explain at least six keywords from the brief.	
Keyword	**Meaning**
pandemic	occurring over a wide geographic area (such as multiple countries or continents) and typically affecting a significant proportion of the population
abnormal	not normal, average, typical, or usual; deviating from a standard: abnormal powers of concentration; an abnormal amount of snow; abnormal behavior. extremely or excessively large: abnormal profit
restrictions	1 : something that restricts: such as. a : a regulation that restricts or restrains restrictions for hunters. b : a limitation on the use or enjoyment of property or a facility.
adapt	adjust or modify fittingly: They adapted themselves to the change quickly.
citizen	Citizenship is gained by meeting the legal requirements of a national, state, or local government.
entrepreneur	is an individual who creates a new business, bearing most of the risks and enjoying most of the rewards.
potential investors	is a person who is likely to put his money into an investment.

Activity 1.2.2 T,R

Key areas of the brief	Possible questions	Explain the key areas in the brief.
Aims and objectives	What is the overall aim? What steps will you take to meet this aim?	design, create, and deploy a digital wellbeing app model using a mobile app builder to support young children to give them the best chance to stay mentally healthy when they return to school. 1- Determine weake points that they need to support them 2- Start creating the mobile app
Budget and schedule	Do you have a budget? When must your project be completed?	Until now wont't be use a budget if it needs it will be simple At the end of the 1st term
Target audience	Who is this project aimed at?	The children and young people were much affected. Due to pandemic breakout.
Materials	What restrictions will you have to deal with when choosing materials for manufacture?	We will use App Inventor
Style or theme	Is there a style or theme required for the mobile app?	Modern style

Activity 1.2.3 T,R,A

In the space below, create a Mind Map for the project. Add key information you have taken from activity 2.2.1 and 2.2.2.

Stage 3: Research and Investigation

Activity 1.3.1 R,A,S,T

In the space below, sketch an existing mobile app you have seen on the market. List at least **five of the design features** you noticed on this app, the explain them with short notes.

State at least one advantage and one disadvantage of the app.

_____
_____
_____
_____
_____

State at least one additional design feature or design modification you would make to improve the app design.

_____
_____
_____
_____

Design research

Compare few apps in the market and conclude on the design you had picked to develop based on the user needs.

Consider the questions below to help you carry out your design research:

What is the name of the app?

What is the purpose of this app?

Can you draw the layout of the app?

Is there a market for this app?

Who is going to use this app?

What is the platform of this mobile app?

What are the interfaces that this app can support?

How is the interaction of this app?

What are the pros and cons of this app?

In the space below, show detailed research of all the aspects of the design brief (any two apps) using a mood board. You may use a combination of text and images to explain the research carried out.
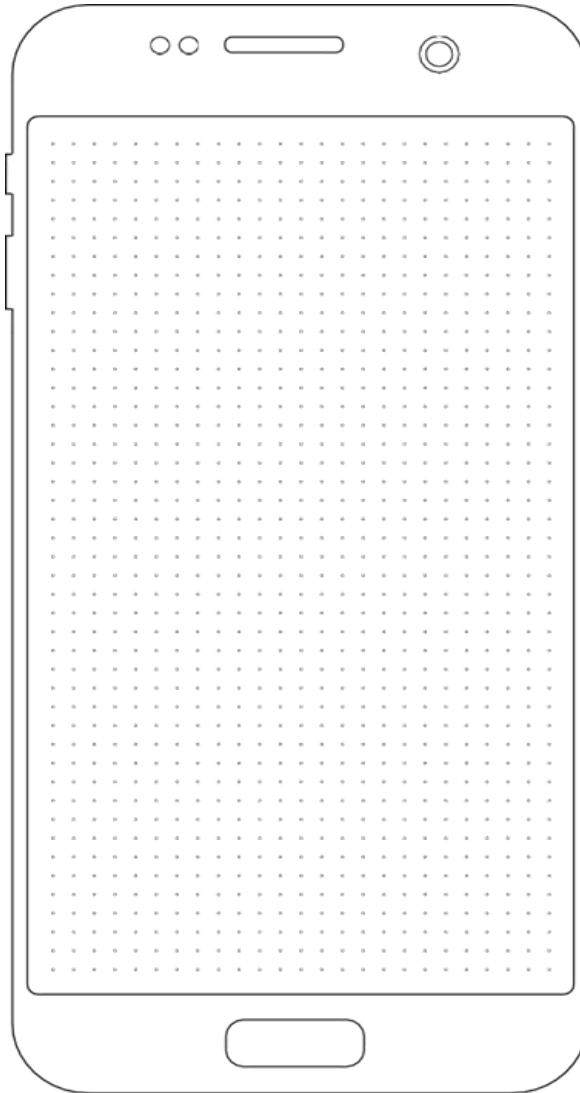
Activity 1.4.1 T,S,A,M,E

Use the wireframes given below to design a possible layout of your app.

Screen #1

State the purpose of screen #1.

_____

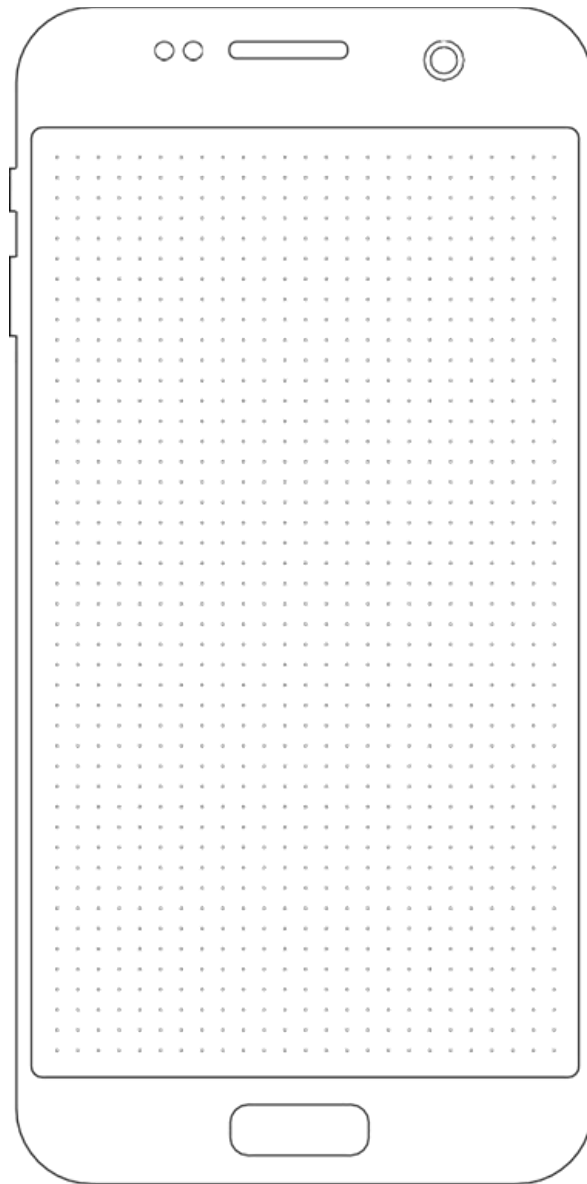**State at least one advantage and one disadvantage of screen #1 design.**

Advantage:

_____

Disadvantage:

_____

Screen #2

State the purpose of screen #2.

_____

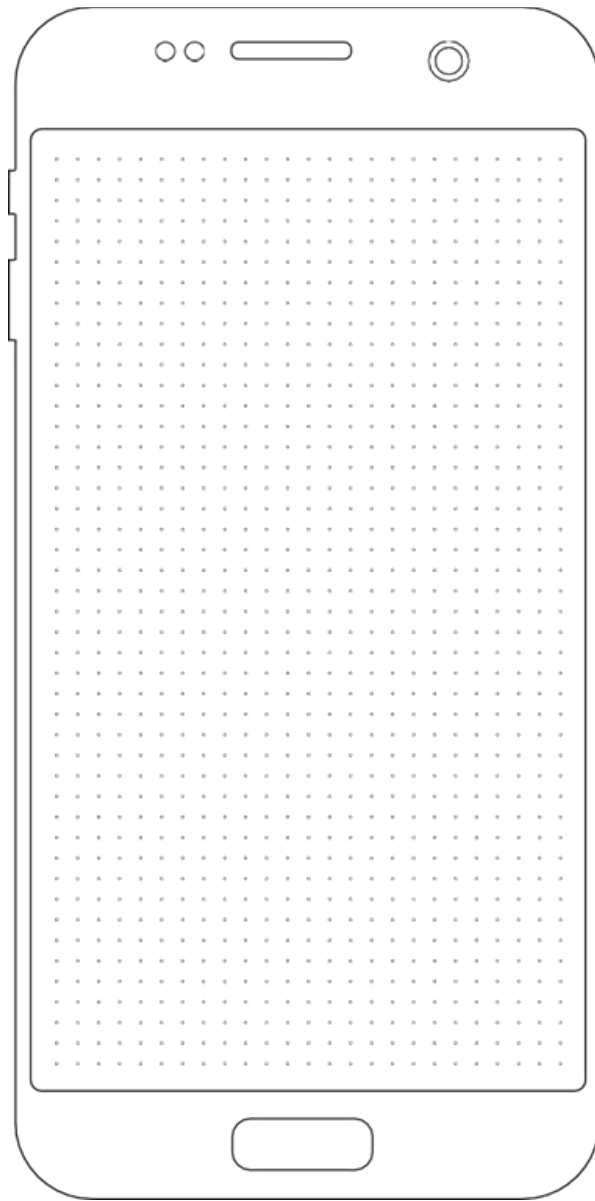**State at least one advantage and one disadvantage of screen #2 design.**

Advantage:

_____

Disadvantage:

_____

Sub-Screen #1

State the purpose of sub-screen #1.

_____

State at least one advantage and one disadvantage of sub-screen #1 design.

Advantage:

_____

Disadvantage:

_____

Sub-Screen #2

State the purpose of sub-screen #2.

_____

State at least one advantage and one disadvantage of sub-screen #2 design.

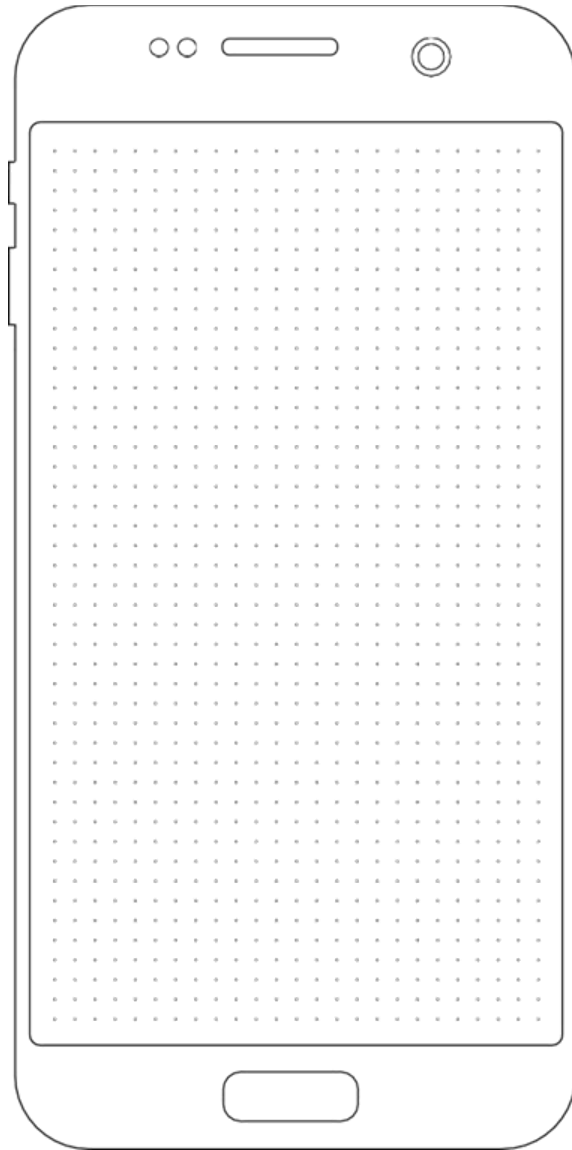Advantage:

_____

Disadvantage:

_____

Sub-screen #3

State the purpose of sub-screen #3.

_____

State at least one advantage and one disadvantage of sub-screen #3 design.
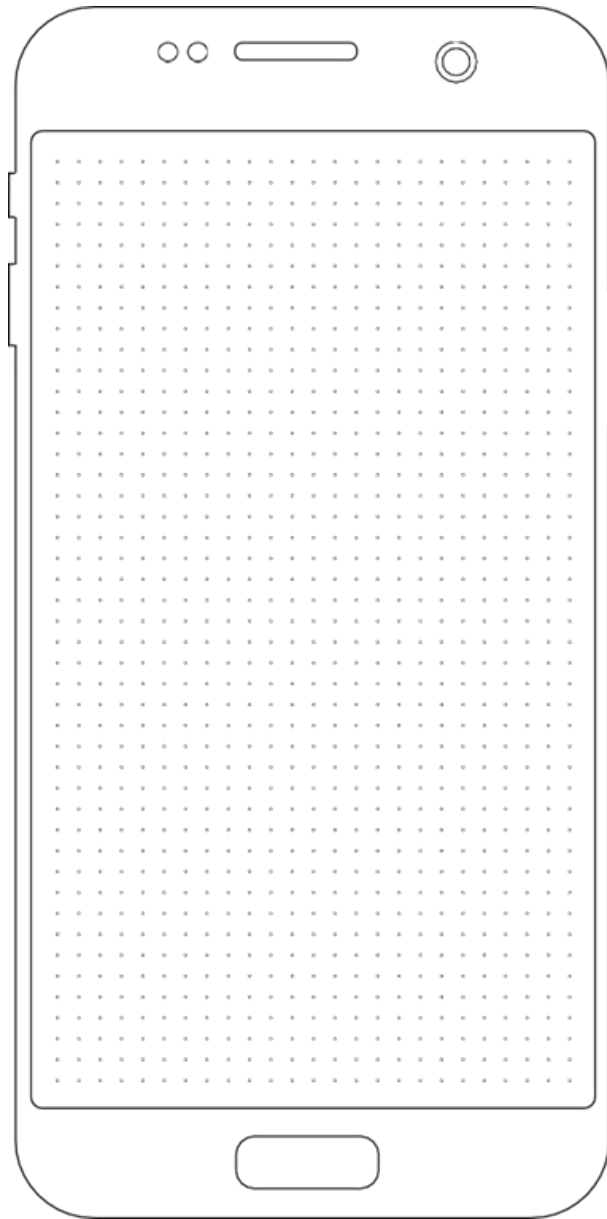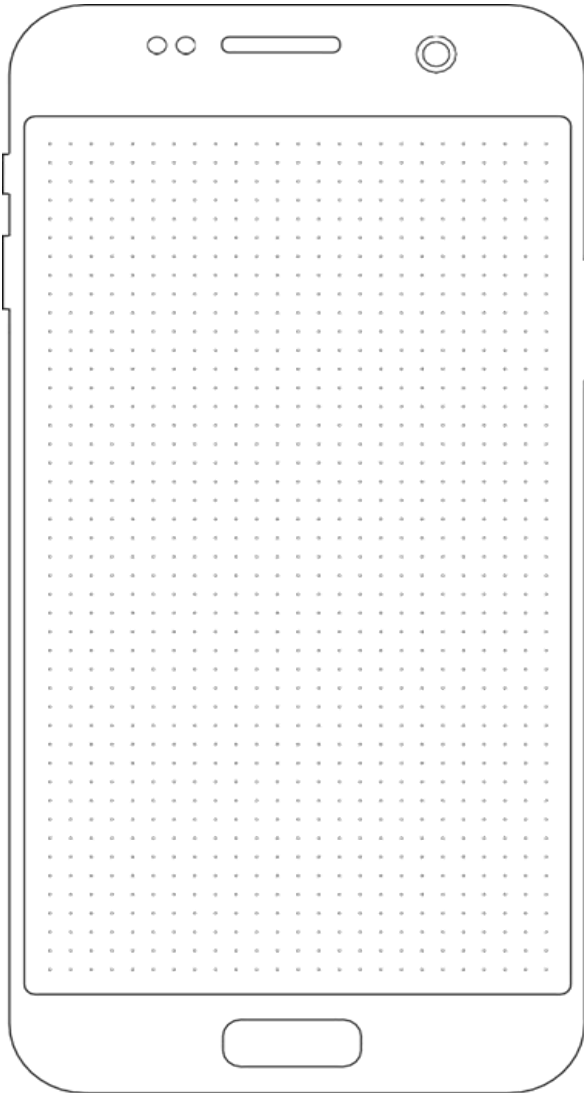
Advantage:

_____

Disadvantage:

_____

Activity 1.4.2 T,S,A,M,E

Use the wireframes given below to design another layout of your app.

Screen #1

State the purpose of screen #1.

_____

State at least one advantage and one disadvantage of screen #1 design.

Advantage:
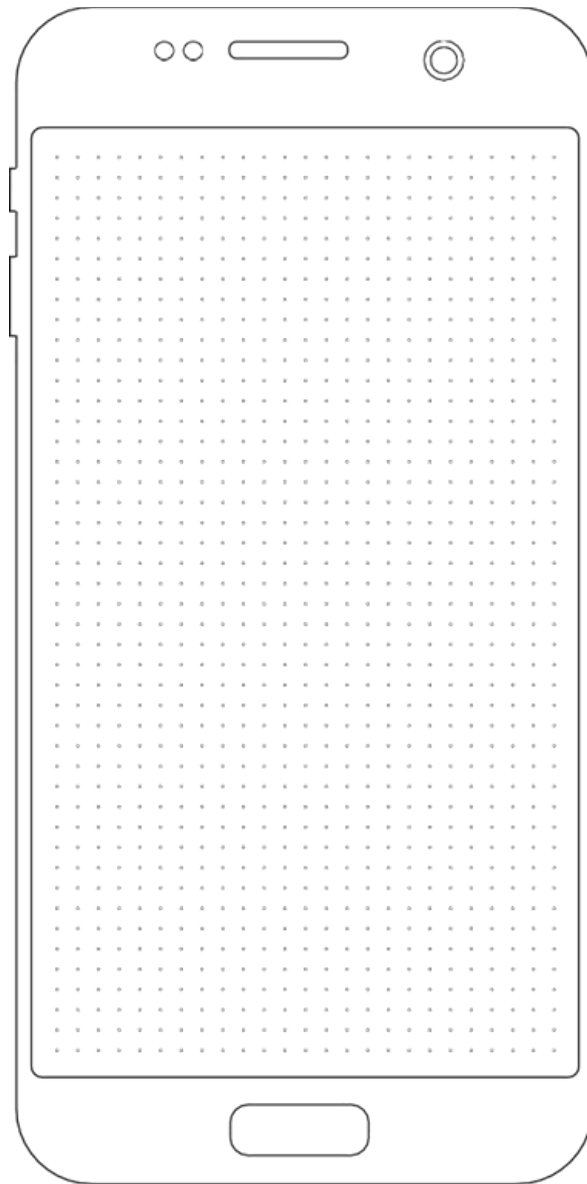
_____

Disadvantage:

_____

Screen #2

State the purpose of screen #2.

_____

State at least one advantage and one disadvantage of screen #2 design.

Advantage:

_____

Disadvantage:

_____

Sub-Screen #1

State the purpose of sub-screen #1.

_____

State at least one advantage and one disadvantage of sub-screen #1 design.

Advantage:

_____

Disadvantage:

_____

Sub-Screen #2

State the purpose of sub-screen #2.

_____

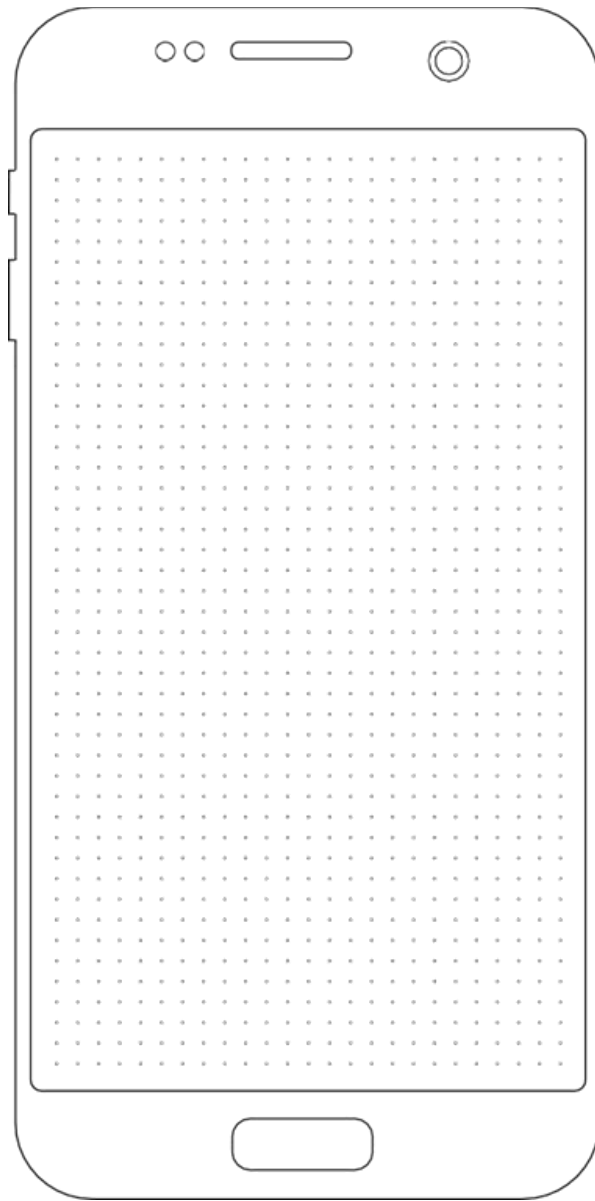**State at least one advantage and one disadvantage of sub-screen #2 design.**

Advantage:

_____

Disadvantage:

_____

Sub-screen #3

State the purpose of sub-screen #3.

_____

State at least one advantage and one disadvantage of sub-screen #3 design.

Advantage:

_____

Disadvantage:

_____

Stage 5: Final solution

Sketch your final design here or use any tool for prototyping your planned mobile app design. Write the advantages and the disadvantages of the completed wellbeing mobile application.

Advantages:

_____

_____

Disadvantages:

_____

_____

Screenshot the final design of all the screens and paste them here. Also, paste the mobile app's block viewer screenshot for all the screens and sub-screens.

Screen #1 - design screenshot

Screen #1 – mobile app's blocks view screenshot(where blocks are assembled to define the components)

Screen #2 - design screenshot

Screen #2 – mobile app's blocks view screenshot(where blocks are assembled to define the components)

Sub-screen #1 - design screenshot

Sub-screen #1 – mobile app's blocks view screenshot (where blocks are assembled to define the components)

Sub-screen #2 - design screenshot

Sub-screen #2 – mobile app's blocks view screenshot (where blocks are assembled to define the components)

Sub-screen #3 - design screenshot

Sub-scree #3 – mobile app's blocks view screenshot (where blocks are assembled to define the components)

Stage 6: Design realisation

Explain the three-tier architecture for the actual software and hardware you had planned for this app to be deployed.

Wellbeing mobile app - three-tier architectures

To deploy your app in a three-tier architecture, you need hardware and software. List all the hardware and software required for the wellbeing mobile app to be in all three layers of mobile architecture.

Hardware

Software

For the sub-screens you have designed, complete the tables as shown below.

Component type	Palette group	Name of component	Purpose
Button	User Interface	Button1	Press to make the kitty meow.
Label	User Interface	Label1	Shows the text "Pet the Kitty."
Sound	Media	Sound1	Play the meow sound.

Sub-screen #1

Component type	Palette group	Name of component	Purpose

Sub-screen #2

Component type	Palette group	Name of component	Purpose

Sub-screen #3

Component type	Palette group	Name of component	Purpose

Stage 7: Evaluation

You will complete this part in two stages:

Activity 1.7.1 T,S,E

Evaluation A:

Closely analyse the design of your wellbeing mobile app and evaluate the design using Nielsen ten heuristic rules.

1. Visibility of system status	• Users should be informed about what is going on, through appropriate feedback within reasonable time.
2. Match between system and the real world	▪ The system should speak the user's language, with words, phrases and concepts familiar to the user, rather than system-oriented terms.
3. User control and freedom	• The system should support the user if they choose system functions wrongly by mistake. The system should support undo and redo.
4. Consistency and standards	• Platform conventions and accepted standard should be followed so that the users should not have to wonder whether words, situations or actions mean the same thing in different contexts.
5. Error prevention	• The system should be designed carefully to make it difficult to make errors
6. Recognition rather than recall	• The user should not have to remember information from one part of the dialog to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
7. Flexibility and efficiency of use	• The system design should cater to both inexperienced and experienced users.
8. Aesthetic and minimalist design	• Dialogs should not contain information that is irrelevant or rarely needed.
9. Help users recognize, diagnose and recover from errors	• Error messages should be expressed in plain language (no codes), to indicate the problem, and suggest a solution.
10. Help and documentation	• Fit is necessary to provide help and documentation. Any information should be easy to search and focused on the user's task.

Rule #	Scale (0 – 4)	Reason for the scale given
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

As an evaluator, what is your evaluation scale total?

As a designer, you must take action based on the evaluation rate given by the evaluators.

Based on the evaluation and the scale rate you gave as an evaluator (4,3,2,1,0), list the rules you did not consider when designing the app.

1.

2.

3.

4.

5.

Evaluation B:

Use the following questions to guide your evaluation of the wellbeing mobile application.

How well does the prototype meet the brief?
_____
_____
_____
_____
_____
_____

Does the design include all the required components?
_____
_____
_____
_____

Which is your preferred operating system to deploy your wellbeing mobile app?
_____
_____

Is your wellbeing mobile app interface pleasing? How could it be improved?
_____
_____
_____
_____
_____
_____

State two things that went well.
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

State two things that could be improved.
_____
_____
_____
_____
_____
_____
_____

Business plan

As an entrepreneur, you need to sell your wellbeing mobile app to other schools so that the student can benefit from it.

The business plan should prepare you to present your business idea to potential investors, such as educational institutions. Write five advantages of your mobile app that can add value to the user experience and persuade them to buy your app.

Use the guidelines below to complete the business plan road map.

Form your team	Create a team and assign roles to each member of the team.
Business idea	Give a brief outline of the business concept to be presented.
Market research	Research potential competition and potential customers.
Sales and marketing	Describe the strategy you will use to create a customer base.
Finance required	Create realistic financial requirements.
Risk assessment	Outline potential weaknesses that may affect the success of the business.
Potential investors	Create a list of potential investors.

START

Form your team

Business idea

Sales and marketing

Market research

Finance required

Risk assessment

FINISH

Potential investors
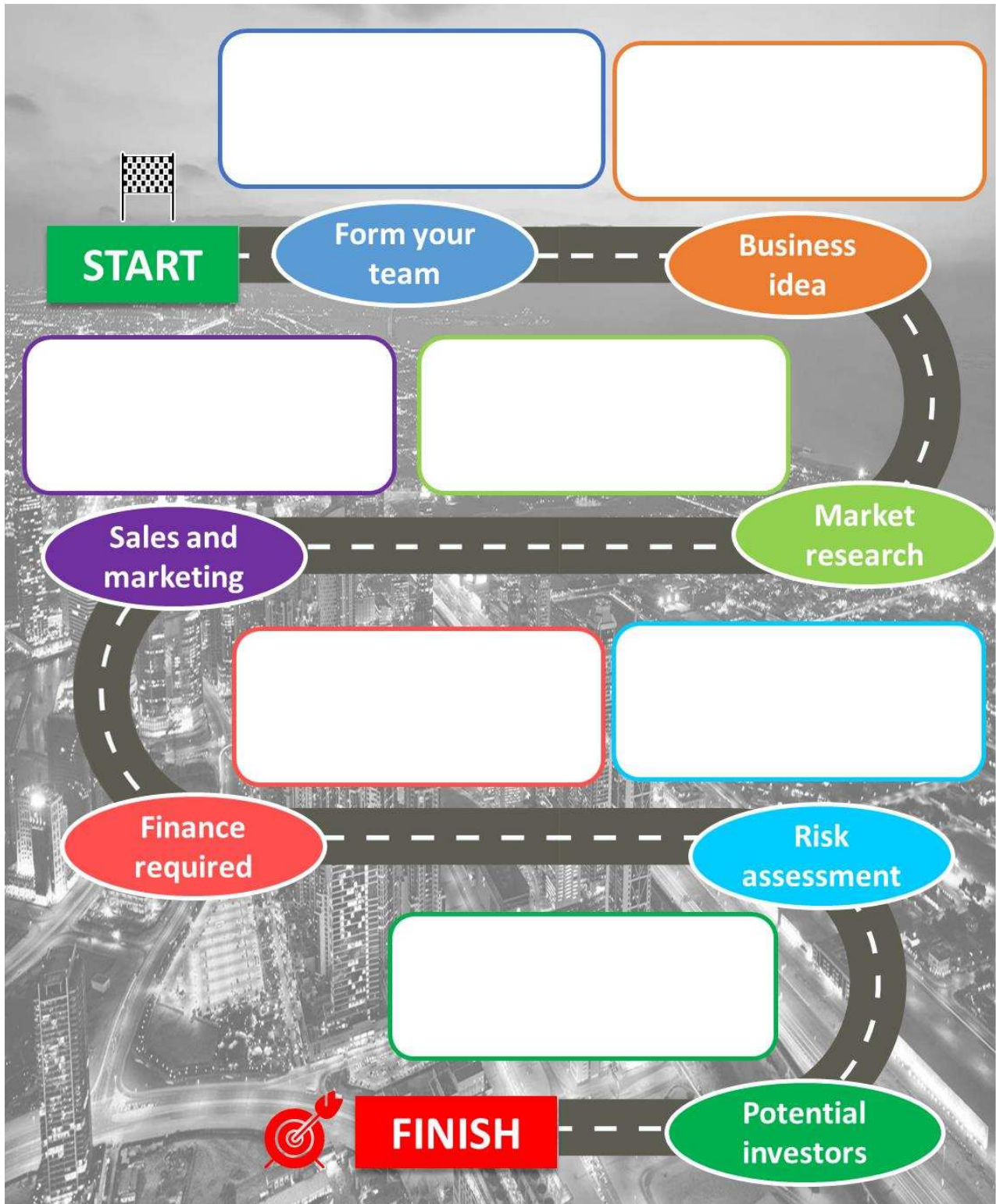
Student reflection

List three things you have learned and two things you have enjoyed doing.

Three things I have learned:

1.

_____

2.

_____

3.

_____

Two things I have enjoyed doing:

1.

_____

2.

_____

Key skills reflection

Key skills (Please tick the box to show your understanding of the skills below.)	I don't understand.	I understand.	I'm an expert.
I can analyse the main sections of a design brief.			
I can address the constraints and requirements of a design problem.			
I can apply different methods of research.			
I can transform research ideas into possible solutions for a design problem.			
I can construct a prototype to solve a design problem through various prototyping means.			
I can test a design prototype for operational expectations.			
I can evaluate the success of implementing the proposed design idea.			

I can improve a design prototype to overcome identified design faults.			
I can create a business plan and work within a team to achieve it.			
Teacher comment:			