

DESIGN AND DEVELOPMENT OF ANDROID APPLICATION OF STATIC FLUID  
E-BOOK AND CALCULATOR

MUHAMMAD NA'IM NASIRUDDIN BIN ABD RASIDI

UNIVERSITI MALAYSIA PAHANG

DECEMBER 2012

**UNIVERSITI MALAYSIA PAHANG ♦**

**BORANG PENGESAHAN STATUS TESIS**

**JUDUL: DESIGN AND DEVELOPMENT OF ANDROID APPLICATION OF  
STATIC FLUID E-BOOK AND CALCULATOR**

**SESI PENGAJIAN: 2012/2013**

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BIN ABD RASIDI**

Alamat Tetap:

**No.253,  
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21500 Bdr Permaisuri,  
Terengganu.**

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DESIGN AND DEVELOPMENT OF ANDROID APPLICATION OF STATIC FLUID  
E-BOOK AND CALCULATOR

MUHAMMAD NA'IM NASIRUDDIN BIN ABD RASIDI

A report submitted in partial fulfilment of the requirements for the award of  
Diploma of Mechanical Engineering

Faculty of Mechanical Engineering  
UNIVERSITI MALAYSIA PAHANG

DECEMBER 2012

### **SUPERVISOR'S DECLARATION**

I hereby declare that I have checked this project and in my opinion it is satisfactory in terms of the scope and quality for the award of Diploma in Mechanical Engineering.

Signature :

Name of Supervisor : AT-TASNEEM BINTI MOHD AMIN

Position : LECTURER

Date : DECEMBER 2012

## **STUDENT'S DECLARATION**

I hereby declare that the work in this thesis is done by myself except for quotations and summaries which have been duly acknowledged. The thesis is unaccepted for any degree and is not concurrently submitted for award of other degree.

Signature :

Name : MUHAMMAD NA'IM NASIRUDDIN BIN ABD RASIDI

ID Number : MB10018

Date : DECEMBER 2012

**Specially dedicated to  
My beloved family and those who have  
Encourage and always be with me during hard times  
And inspired me throughout my journey of learning**

## ACKNOWLEDGEMENTS

Firstly I would like to be thankful to God as he blessed me for being healthy as long as I am doing my Final Year Project, and so to my helpful and kind supervisor for her brilliant ideas, invaluable guidance, continuous support and guidance and gracious encouragement in making this project a reality.

She has always impressed me with her systematic professional conduct, her wide knowledge in technologies and her belief that a Diploma program is like a valuable long-life experience.

For that, i really appreciates her continuous support since I have chosen this project title until this moment of memory of conclusion. I am lucky to have such good and helpful supervisor as she guides me a lot since the moment of me starting this project until this moment of appreciation.

Thus, I am sincerely thanks her for her precious time spent and correcting much mistakes I have done. My sincere thanks also goes to my labmates, and members of the staff of the Mechanical Engineering Department of UMP who had involved in helping me in many ways and made my stay at UMP so pleasant and such unforgettable moment.

My special thanks to my parent and all the persons who have raised me from a baby until who am I now, whose have given me pure love and knowledge and their patient and sacrifices for me. In link of this project, they had given me much support and encouragement until this project is finished. At the time which is hard for me, they spent their time also in the midnight of helping me moreless with my project.

So many thanks to anybody who just involved in this project including survey candidates for their developing comments and feedback.

## **ABSTRACT**

This thesis deals with the Design and Development of Static Fluid E-Book and Calculator(Android). The objective of this thesis is to design and develop such Fluid Statics E-book and calculator in a convenience way which is made in android application. The thesis explains how this project is going to help students with Fluid Statics with convenience way of using it physically. It also contains the application's content which are compatible with Diploma students who take Fluid Mechanics(Fuild Statics) subject. This application was made using an online software which built APK files using combination of user interface type coding. The application is found on Google website, named appinventor.mit.edu. As the application is build, it is also run simultaneously on an virtual android phone which linked on the online software.



## ABSTRAK

Tesis ini adalah berkaitan Rekabentuk dan Pembangunan Aplikasi Android mengenai Bendalir Statik E-Buku dan Kalkulator(Androtic). Objektif tesis ini ialah untuk merekabentuk dan membangunkan Bendalir Statik dalam bentuk E-buku dan kalkulatornya dalam cara lebih mudah yang dibuat dalam aplikasi android. Tesis ini juga menjelaskan bagaimana projek ini akan membantu pelajar Statik Bendalir dengan cara lebih mudah secara fizikal . Ia juga mengandungi kandungan aplikasi yang serasi dengan pelajar-pelajar Diploma yang mengambil Mekanik Bendalir (Bendalir Statik) tertakluk. Aplikasi ini telah dibuat menggunakan perisian dalam talian yang membina fail APK menggunakan kombinasi kod jenis antara muka pengguna. Aplikasi didapati di laman web Google, appinventor.mit.edu dinamakan. Semasa aplikasi dibina, aplikasi itu juga diuji secara serentak pada telefon android maya yang dikaitkan pada perisian atas talian tersebut.

## TABLE OF CONTENTS

	<b>Page</b>
<b>BORANG STATUS TESIS</b>	i
<b>FRONT PAGE</b>	ii
<b>SUPERVISOR'S DECLARATION</b>	iii
<b>STUDENT'S DECLARATION</b>	iv
<b>DEDICATION</b>	v
<b>ACKNOWLEDGEMENTS</b>	vi
<b>ABSTRACT</b>	vii
<b>ABSTRAK</b>	viii
<b>TABLE OF CONTENTS</b>	ix
<b>LIST OF FIGURES</b>	xii
<b>LIST OF SYMBOLS</b>	xiv
<b>LIST OF ABBREVIATIONS</b>	xv
<b>CHAPTER 1          INTRODUCTION</b>	
1.1    Introduction	1
1.2    Project Background	2
1.3    Problem Statement	2
1.4    Objective	3
1.5    Scope	3
1.6    Flowchart	4
1.7    Gantt chart	6
1.8    Conclusion	7

## **CHAPTER 2            LITERATURE REVIEW**

2.1	Introduction	8
2.2	History of Android	8
2.3	Product Review	10
2.3.1	Fluid Mechanics 1 (Product 1)	10
2.3.2	Fluid Mechanics Free (Product 2)	12
2.3.3	Fluid Mechanics Basic (Product 3)	13
2.3.4	Fluid Mechanics Pack (Product 4)	14
2.3.5	Fluid Mechanics Calculator (Product 5)	14
2.3.6	Fluid Mechanics E-Book (Product 6)	15
2.4	Conclusion	16

## **CHAPTER 3            DESIGN CONCEPT AND SELECTION**

3.1	Introduction	17
3.2	Application Software	17
3.2.1	SDK Android	17
3.2.2	Google AppInventor	18
3.3	Application Software	17
3.3.1	Designer	19
3.3.2	Concept Designs	19
3.4	Designing Application	22
3.5	Conclusion	28

## **CHAPTER 4            RESULTS AND DISCUSSION**

4.1	Introduction	29
4.2	Results	29
4.3	Satisfactory Survey Results	31
4.4	Project Troubleshooting	34
4.5	Conclusion	37

## **CHAPTER 5            CONCLUSION**

5.1	Introduction	38
5.2	Recommendation and Improvement	38
5.3	Conclusion	39
<b>REFERENCES</b>		40
<b>APPENDICES</b>		41
A	Project Schedule	41
B	Application Flowchart	42

**LIST OF FIGURES**

<b>Figure No.</b>		<b>Page</b>
1.1	Project Flowchart	5
1.2	Gantt Chart	7
2.1	Fluid Mechanics 1	12
2.2	Fluid Mechanics 1 Screenshots	13
2.3	Fluid Mechanics Free	14
2.4	Fluid Mechanics Basic	15
2.5	Fluid Mechanics Pack	16
2.6	Fluid Mechanics Calculator	17
2.7	Fluid Mechanics E-Book	18
3.1	Concept 1	22
3.2	Concept 2	23
3.3	Concept 3	23
3.4	Concept 4	24
3.5	First Screen	25
3.6	Overview Screen	26
3.7	Menu Screen	27
3.8	Notes Menu	28
3.9	Notes Screen	29
3.10	Screen with Video	30
3.11	Calculator Screen	31
3.12	Calculator Screen 2	31

4.1	Welcome Screen	35
4.2	Note Screen	35
4.3	Menu Screen	36
4.4	Question Screen	36
4.5	Survey Form	38
4.6	Survey Result	39
4.7	Survey Chart with Data	40
4.8	Screens before Troubleshooting	41
4.9	Menu Screen After Troubleshooting	42
4.10	Notes Screen After Troubleshooting	42
4.11	Question Screen After Troubleshooting	43
4.12	Calculator Screen After Troubleshooting	43

## LIST OF SYMBOLS

\$ American Dollar

## LIST OF ABBREVIATIONS

UMP	University Malaysia Pahang
MIT	Massachusetts Institute of Technology
GUI	Graphical User Interface
PC	Personal Computer
OS	Operation System
MMS	Multimedia Message
API	Application Programming Interface
USB	Universal Serial Bus
UI	User Interface
PDF	Portable Document Format
UIQ	User Interface Quartz
RIM	Research In Motion
IDE	Integrated Development Environment
APK	Android File Extension



## **ABSTRACT**

This thesis deals with the Design and Development of Static Fluid E-Book and Calculator(Android). The objective of this thesis is to design and develop such Fluid Statics E-book and calculator in a convenience way which is made in android application. The thesis explains how this project is going to help students with Fluid Statics with convenience way of using it physically. It also contains the application's content which are compatible with Diploma students who take Fluid Mechanics(Fuild Statics) subject. This application was made using an online software which built APK files using combination of user interface type coding. The application is found on Google website, named [appinventor.mit.edu](http://appinventor.mit.edu). As the application is build, it is also run simultaneously on an virtual android phone which linked on the online software.

## **ABSTRAK**

Tesis ini adalah berkaitan Rekabentuk dan Pembangunan Aplikasi Android mengenai Bendalir Statik E-Buku dan Kalkulator(Androtic). Objektif tesis ini ialah untuk merekabentuk dan membangunkan Bendalir Statik dalam bentuk E-buku dan kalkulatornya dalam cara lebih mudah yang dibuat dalam aplikasi android. Tesis ini juga menjelaskan bagaimana projek ini akan membantu pelajar Statik Bendalir dengan cara lebih mudah secara fizikal . Ia juga mengandungi kandungan aplikasi yang serasi dengan pelajar-pelajar Diploma yang mengambil Mekanik Bendalir (Bendalir Statik) tertakluk. Aplikasi ini telah dibuat menggunakan perisian dalam talian yang membina fail APK menggunakan kombinasi kod jenis antara muka pengguna. Aplikasi didapati di laman web Google, appinventor.mit.edu dinamakan. Semasa aplikasi dibina, aplikasi itu juga diuji secara serentak pada telefon android maya yang dikaitkan pada perisian atas talian tersebut.

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

Firstly, this chapter is an opening chapter of the project, as an introduction for this android application. This APK application is made using the appinventor.mit.edu software which found on Google.com. Begin with the question of what is android, it is one of the drastically developing operating system OS in the last 15 years. Starting from black and white screen to the latest smart phones today, mobile OS has greatly evolved from Palm OS to Windows pocket PC OS from 1996 to 2000, before the famously used Blackberry OS and Android these days. The android is not only typical platforms such as the symbian but also a software bunch comprise not just the OS but taken middleware and key applications into account too. The history begins as Android Inc was founded in Palo Alto of California, United States of America by Andy Rubin, Rich Miner, Nick Sears and Chris White in 2003 and Android Inc was just acquired by Google two years later. The first version has been released basically before series of updates continuously released years back then. If we take a look of the series of these android platforms, there are much different features. From Android 1.1 released in Feb 2009 which support for saving attachments for MMS, marquee in the layouts and changing API, android begins to develop to version 1.5, 1.6, 2.2/1, 2.3, 3.0, 4.0 and the latest is 4.1. Every single android platform has their own specific name excluding the 1.1 version. The more latest version catches more exciting features such as USB tethering and Wi-Fi hotspot functionality, support Adobe flash, multitouch screen and keyboard, extra large screens and resolutions, optimized tablet support with a new user interface and many more. The latest android-support gadget has amazingly awesome camera feature which capture

images at high resolution of 16MP. As many features have brought on, we are keen on making the project as a android capable application which can be run on most platforms available in the market. With quite limited features provided, the project is made using guidelines and instructions in the AppInventor software. Initially the Java package is to be downloaded before installing it and just then the application can be run perfectly with working internet connection. In the online software, we will find the “Designer” page or screen where the project screen is to be designed how and how. Every palette is to be dragged onto the screen. On the “Blocks Editor” online window, the commands are created using matching of puzzles with hidden coding behind the user friendly UI. Wrong matched puzzles are problematic during the compiling process and the application would not be created until the errors are corrected. For this application itself, it has the contents of Fluid Statics, covers the Diploma scope of study. It uses button interface to move from page to page. There are four main buttons on the main screen which are “Only Notes”, “Sample Question”, “Tutorials” and “Quit”. Those buttons will bring the user to certain page as the start page of one of those chapters. The user may find it easier to use as he/she get used to the application soon.

## **1.2 PROJECT BACKGROUND**

The project is about an android application which created using AppInventor software. More than that, it also concern on how the idea is generated, proceeding with the preparation stage of the needed software, the process of creating and developing the application, survey and feedback, troubleshooting, final result, discussion and conclusion. Every single process involved in making every screen found on the application is there. This contains the interface, UI coding, function and also pros and cons of the application.

## **1.3 PROBLEM STATEMENT**

The problem rises as student nowadays feel tired of carrying heavy study materials such as thick books and laptops, bringing means of mobility problem. Books of kindly thick pages until hundreds of pages may catch boringness in some

students. In case of study way, some students prefer to have either more diagram or other interactive method. In addition, the application is also to overcome mobility problem that might be a problem to person who do not like to carry heavy things. As the application would not weight its user any grams, it has one advantages over the books. In the other hand, this application is more durable instead of books which it could last longer as it would not be affected by means of wether or temperature factors. The application would not vary so far with the e-book found on internet, but the different is this application is downloaded and be “plug and play” on any android platforms offline. In addition, e-book are familiar in the PDF format, but not all the same. In this case,those non-PDF-format e-books might not work correctly on some android platforms. By creating this application, android users are luckily provided with this application which surely work on their android gadgets.

#### **1.4 OBJECTIVES**

The application is made based on several objectives which guide the production process until it archieves the stated objectives.

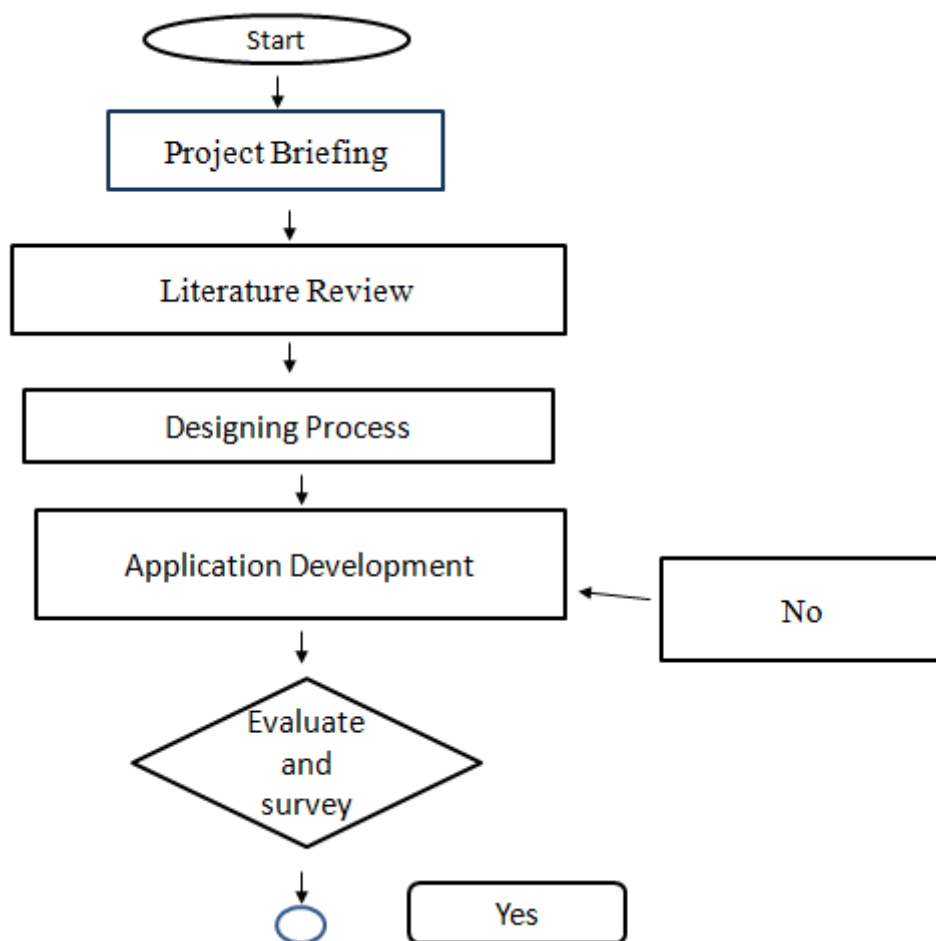
- To design an android application based on given scopes.
- To develop an android application of Static Fluid E-book and Calculator.

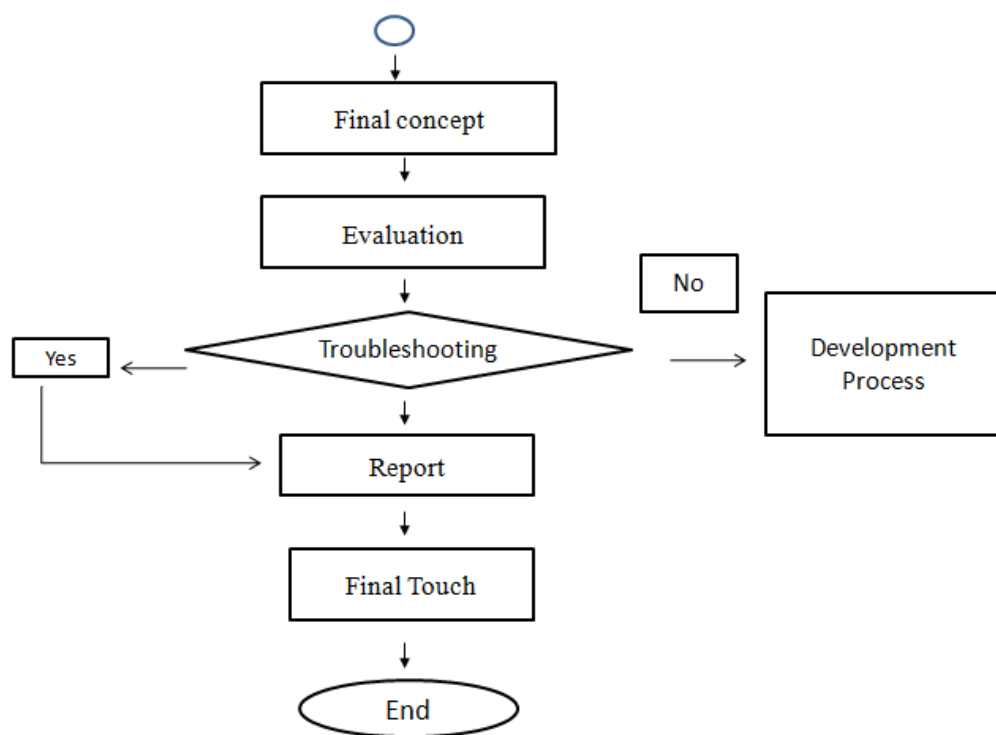
They might want to explore more as many people now are so keen on gadgets technologies. Moreover, many people these days are looking into android OS gadgets as they carry many functionality and so attractive among every walks of life.

#### **1.5 SCOPE**

- This project only cover chapter Static Fluid in Diploma level.
- Only covers subtopic
  - Buoyancy,
  - Manometry,
  - Pressure,
  - Stability,
  - Submerged Plane and Curved plane Surfaces.

## 1.6 FLOWCHART





**Figure 1.1:**Project Flowchart

1.7 GANTT CHART

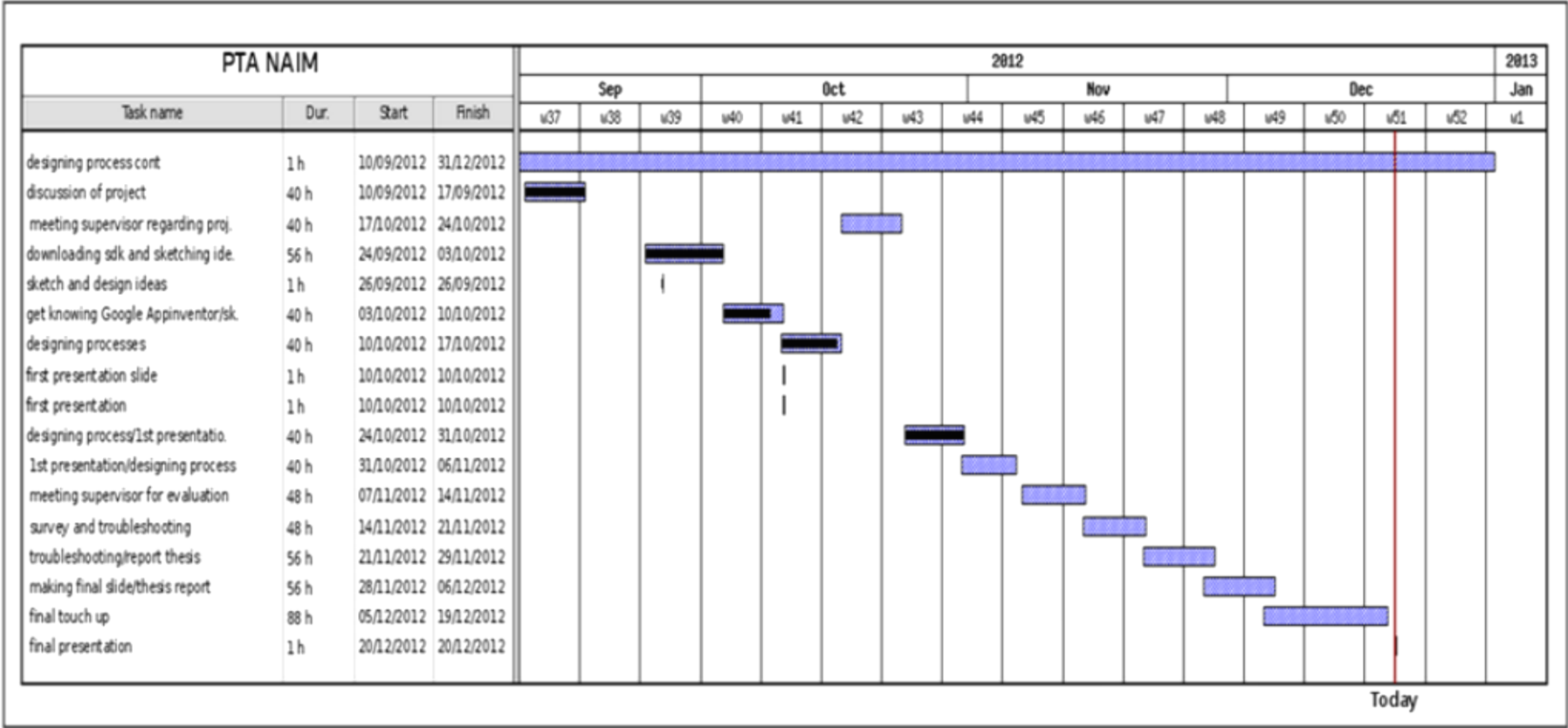


Figure 1.2: Project Gantt Chart



## **1.8 CONCLUSION**

This chapter would give the overall overview of the thesis regarding the project application; where it locally comes and how it is created through many newly-learned-steps processes.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

The thesis's literature review is describing how the idea is getting generated then giving the solution until the problem statement is resolved. Therefore, during research many articles are found related to the subject. Later, those articles are counted into this section of thesis. These include the brief history of the android, the overview of the platforms and smart phones, and how the idea was generated.

#### **2.2 HISTORY OF ANDROID**

In these modern days, mobile phones usage has been dramatically increased. If we look into comparison of PCs and mobile devices, it has the proximity 3.5 times than the PCs of usage. Those mobile devices nowadays have carried wide variety of application data such as sharing medias, imaging, internet browsing, uploading and downloading medias and documents, to list but a few. Noticeable changes of usage can be seen as those mobile devices are developing in case of falling selling prices, better mobile processor, larger screen sizes, etc. As technologies develop a lot, mobile devices are also getting smarter from the Symbian OS to Blackberry OS, later to Windows OS and Android platform.

The Symbian OS stands two level of software stacks which known as kernel and middleware and application platforms like UIQ(User Interface Quartz). It is available on up to 120 phone models. Scrolling down into Blackberry OS which is also known as RIM(Research in Motion) OS, it has the differences with the Symbian

OS as it includes kernel, middleware and many applications in one software stack. Blackberry users are able to write Java ME applications using the development tools. This OS also support third-party operation which is downloaded from unknown sources using Blackberry API(Application Program Interface) classes.

Moving to android, it is actually a Linux-based open source platform. Android is founded by Google, 65 different technical leader companies including HTC, Intel, Sony Ericsson, NVIDIA, T-Mobile, Mac OS (Apple) and many more. Firstly launched android phone was by HTC in 2008. All of its applications are develop using Java programming language which is run on Dalvik virtual machine.

Skipping to how the android itself is made of, it is actually one of the series of developed C coding. There are series of programming language versions that have been modified through a chain of time later developed the android version. In the earlier version, mobile platform developers have used the C, C++, C#, Asp.NET, HTML, JavaScript and others to create mobile platform and applications. This series of programming is a bit learnt by us in the first year of Diploma course study under the subject Computer Programming which includes C and C++ programming languages.

Those programming languages keep developing to back-end server code; Ruby, Java; Front End code; Objective C, Java and Javascript. This series of language creates platform which can run native iOS, native Android and HTML5.

Then it comes to 5app which write HTML, CSS and Javascript languages which platform on iOS(iPhone, iPad, iPod touch), Android and BlackBerry with integrated development environment available on Cloud-based IDE.

When it comes to CodenameOne, they uses Java and do IDE by using Netbeans and Eclipse. Adobe AIR and alcheMo also contribute by producing and use their Flash Builder, Flash Professional, IntelliJ IDEA-with commercial licenses available and Adobe AIR SDK.

Soon after that, Android is created using Java but parts of the code can be in C, C++ language. This series of platform run on only android gadgets, because of Dalvik VM, released in March 2009. It uses .apk file type instead of Java which carry .java, .class or .jar filename extensions. Android is free under IntelliJ IDEA Community Edition.

## **2.3 PRODUCT REVIEW**


During the research, products of application are reviewed in the Google Play site. Some of them are (a)Fluid Mechanics 1, (b)Fluid Mechanics Basic, (c)Fluid Mechanics Calculator, and (d)Fluid Mechanics Pack.

### **2.3.1 Fluid Mechanics 1 (Product 1)**

In Fluid Mechanics 1, it covers more on the calculators in the topics of Absolute Pressure, Bernoulli Theorem, Brake Theorem which are more to Fluid Kinematics subtopics. It has many formulas but less in term of notes. So, it may best be such a “portable calculator” to a user than to be a reference material. It is not a free version of application which you have to buy it for \$0.99.

### Fluid Mechanics I

Darren Gates




★★★★★ (5)


**\$0.99 BUY**

✓ This app is compatible with your Celcom Sony Ericsson MK16i.


More from developer




**Link**  
DARREN GATES  
★★★★★ (52)  
\$0.99



**Professional dB (SPL) Meter**  
DARREN GATES  
★★★★★ (19)  
\$0.99




**Decibel Volume Meter**  
DARREN GATES  
★★★★★ (15)  
\$0.99



**Science Facts**  
DARREN GATES  
★★★★★ (46)  
Free

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## Description

Many calculators from Fluid Mechanics (physics & engineering).  
Many calculators from Fluid Mechanics (physics/engineering), including:

- Absolute Pressure
- Bernoulli Theorem
- Brake Horsepower
- Bulk Modulus
- Compressibility
- Head Loss
- Flow Rate

Visit Developer's Website >   Email Developer >

## App Screenshots

## User Reviews

Write a Review

5 star	1
4 star	2
3 star	2
2 star	0
1 star	0

Average rating

# 3.8

★★★★★  
5

7

Tweet

ABOUT THIS APP

RATING:  
★★★★★  
(5)

UPDATED:  
October 30, 2010

CURRENT VERSION:  
1.3

REQUIRES  
ANDROID:  
2.0 and up

CATEGORY:  
Tools

INSTALLS:  
500 - 1,000

SIZE:  
293k

PRICE:  
\$0.99

CONTENT RATING:  
Everyone

Figure 2.1: Fluid Mechanics 1

Visit Developer's Website › Email Developer ›

## App Screenshots

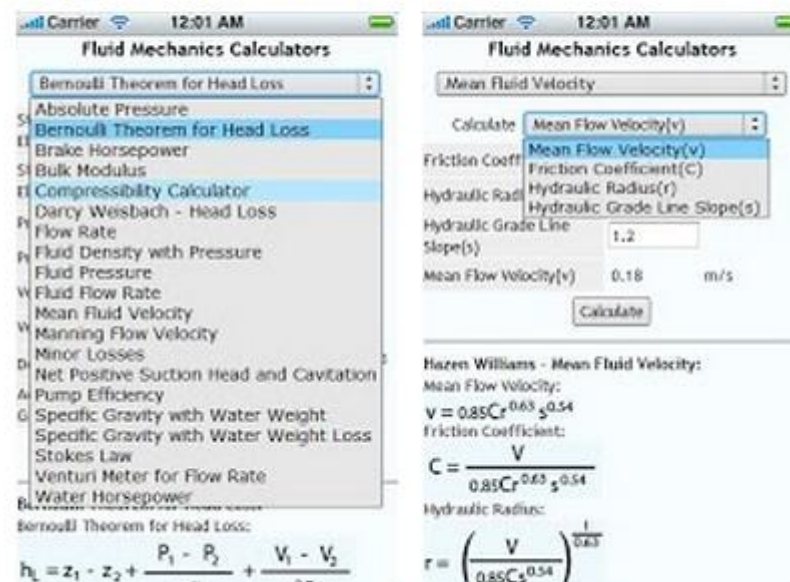


Figure 2.2: Fluid Mechanics 1 Screenshots

### 2.3.2 Fluid Mechanics Free (Product 2)

Fluid Mechanics Free is more to hydraulic analysis in pipelines. The application is closely related to Fluid Kinematics. It calculates the fluid velocity, flow depth and percent flow in circular pipe.

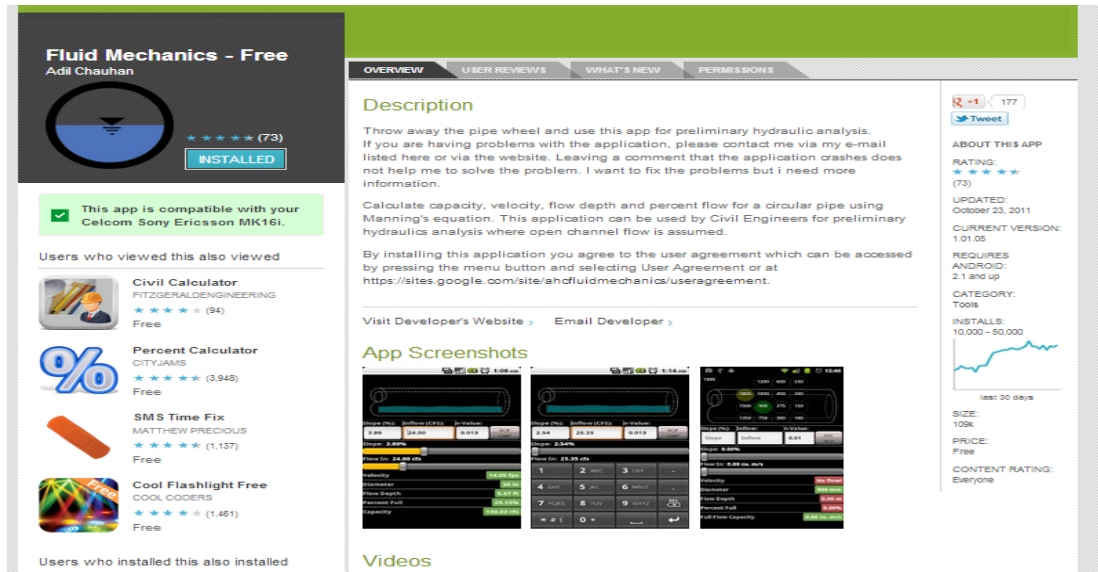


Figure 2.3: Fluid Mechanics Free

### 2.3.3 Fluid Mechanics Basics (Product 3)

When reviewing the Fluid Mechanics Basics application, it is convincing in term of the wide range of formulas, but not much with the calculator and notes.

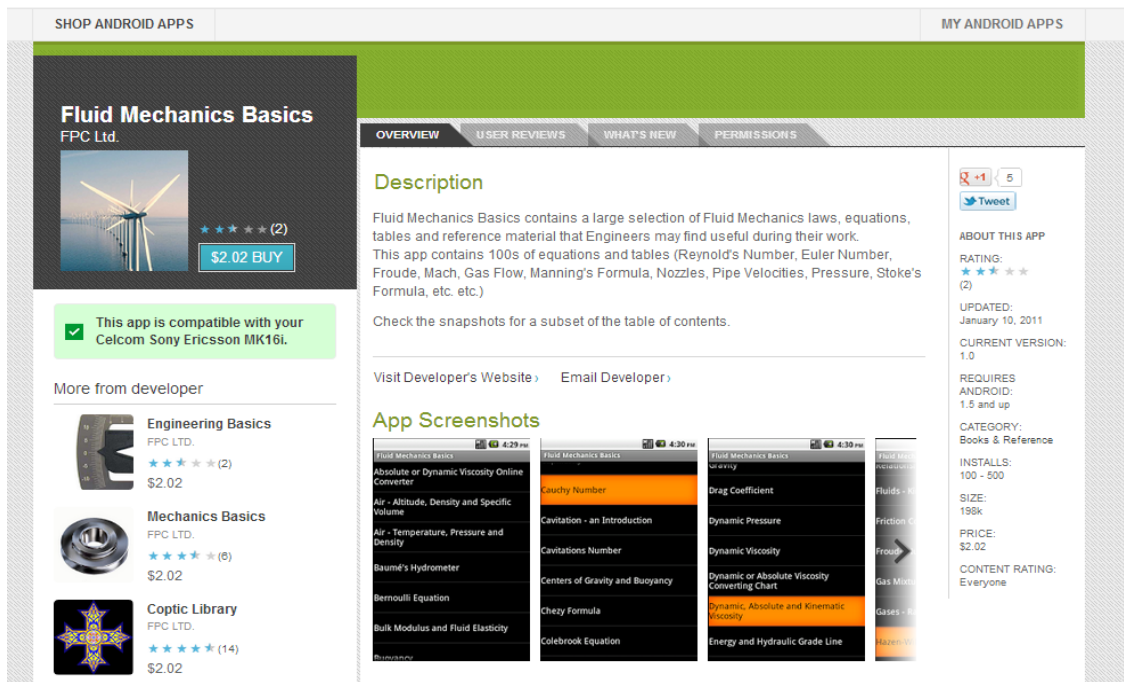


Figure 2.4: Fluid Mechanics Basic

### 2.3.4 Fluid Mechanics Pack (Product 4)

Fluid Mechanics Pack has 97 calculators and 29 converters, related not that much with Fluid Statics. Besides, no notes are provided. It may be find very versatile in term of calculators, but not notes and description, not even brief.

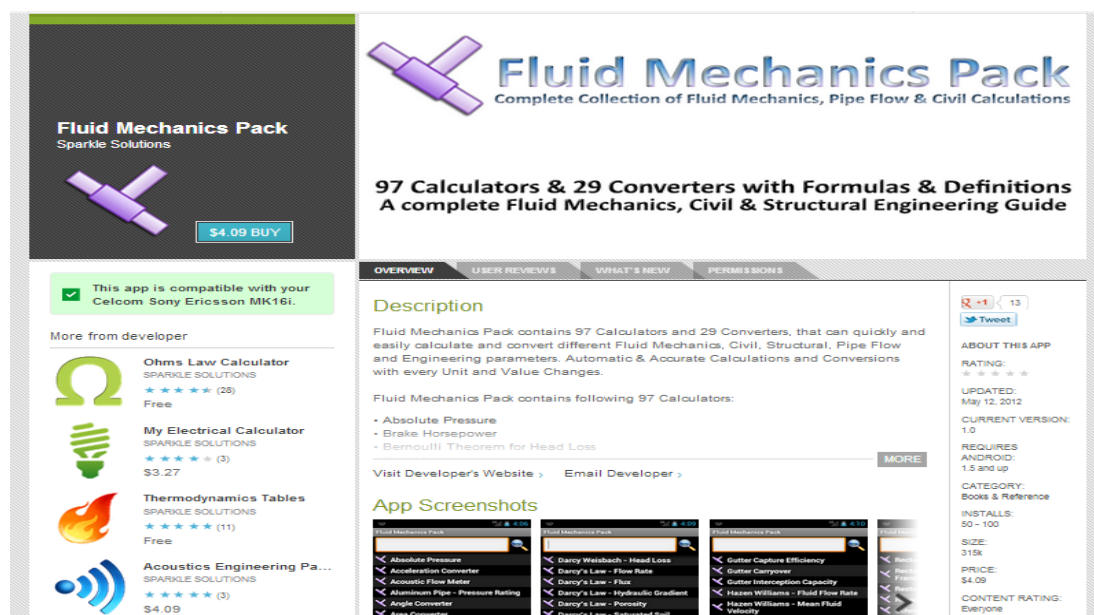


Figure 2.5: Fluid Mechanics Pack

### 2.3.5 Fluid Mechanics Calculator (Product 5)

Taking a journey on Fluid Mechanics Calculator product does not bring much different with the previous product. This kind of product consists of wider range of calculators which includes Civil and Structural formulae based calculator. 97 of its calculators of various topics of engineering field may be a versatile mobile calculator which is not that practical as a study material.



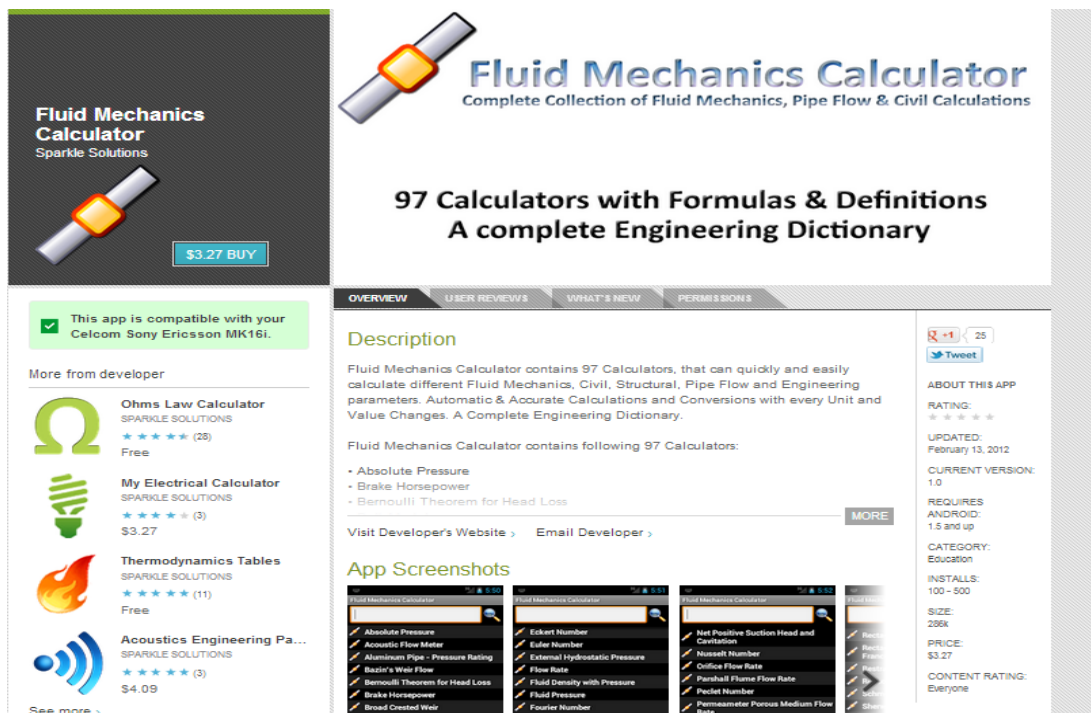
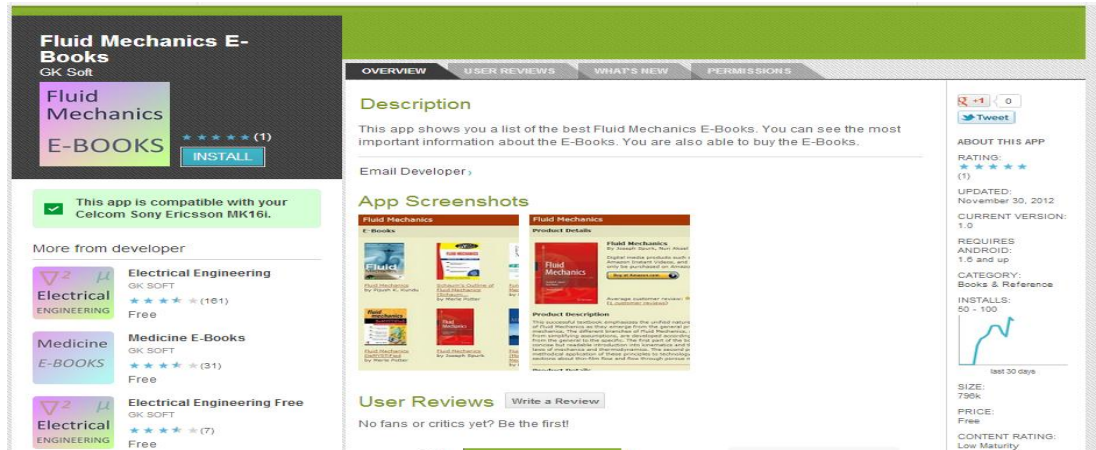


Figure 2.6: Fluid Mechanics Calculator

### 2.3.6 Fluid Mechanics E-Book (Product 6)

One more product that has been reviewed is Fluid Mechanics E-book is actually a “search engine” to find available other e-books available in the market instead of a study material. It is working online searching for various type of e-books available which available in the internet.



**Figure 2.7:**Fluid Mechanics E-Book

## 2.4 CONCLUSION

In a nut shell, this literature survey tells briefly about the android which non android users may also catch some ideas of what is android. The developments of gadget and platform technologies have given a serious impact onto the IT field. Besides, product review has taken us to a short journey of the advantages and disadvantages of listed products that were reviewed in the project. Thus, it may add ideas to the variety of features in the research product.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 INTRODUCTION**

In this design concept chapter, most of the part discussion is about the processes of the project product. It is including the software for making the application, how the application is made, steps of making every feature functions, and the finishing process.

#### **3.2 APPLICATION SOFTWARE**

In general, there are actually many applications that can be used to produce this project application. But, yet to know is there are some weakness in terms of user friendly features, way of usage, software-PC companion, and few more. Software such as SDK Android, Java Eclipse and Google AppInventor are used initially in making the application. But, because of several factors, only one particular software is used. Below are characteristic of listed software and pros and cons of every one of them.

##### **3.2.1 SDK Android (Software Development Kit)**

Describing SDK Android software is much harder than describing a mobile engine. Why? It is because of the companion which have to be downloaded initially before one can run the software in his/her PC, which are sorts of packages of files that are used in creating a .apk application. Yet, one must have learnt about the C coding in details then he/she can use this kind of software. In other words, it is

created for true programmers. Thus, it is hard for us to design our application using this kind of software which we have almost no idea of how this software functions. The software is described good in making .apk application without compromising the product application in particular storage size. It is comfortable to be use for expert programmers with ideas of coding as one must insert the coding one by one in order to make the application. SDK Android run simultaneously with Java Eclipse that also has to be installed before using the software.

### **3.2.2 Google AppInventor**

In Google AppInventor software, it is more versatile for beginner user as it run on simpler way of usage. Having a valid Google account is compulsory for its user. But, the contrast weakness of the software is one have to be connected to the internet while using the application. In addition, fast or good internet connection is required for a good working/usage experience. Without a good internet connection, the application might be problematic in terms of working performance. In AppInventor, there are several basic windows which work at the same time one use it. But at first, users have to download the Java files which compatible with his/her device. Just after that the user can run the designer completely with the Blocks Editor; where the user creates the commands of his/her desire.

## **3.3 INSTALLING SOFTWARE**

As we chose to use the AppInventor software, there are a few steps that have to be followed before we can use the software. First of all, we need to go to the AppInventor.mit.edu website and see the configuration setting. The configuration setting is different of every type of gadget. Then, we have to download Java through the given link on the site. But, before all, make sure we have a valid Google account. After every configuration and Java is installed and downloaded completely, then we can create a project by clicking on “Invent” button on the first page on the AppInventor site. Lets not forget the Learn button which appears under the Invent button.

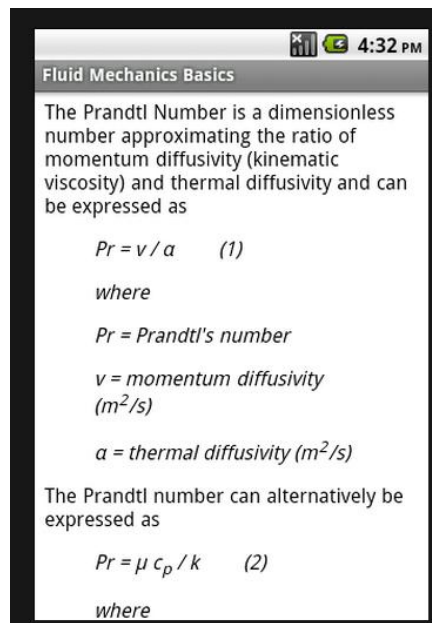
### **3.3.1 Designer**

After clicking on the “Invent” button, first page of the project will appear. Click on “New Project”, insert the desired name of the project, and then the Designer window will appear. On the window, many palettes are listed on the left side of screen. On the “Basic” group palettes, Button, Canvas, CheckBox, Clock, Image, Label, ListPicker, PasswordTextBox, TextBox and Tiny DB are listed.

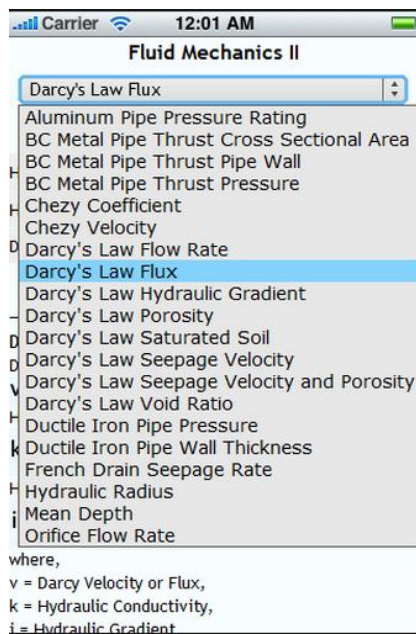
In media group palettes, Camcorder, Camera, ImagePicker, Player, Sound and VideoPlayer are ready to be chosen. Not much palettes are there in Animation group which consist of Ball and ImageSprite only. Social, Sensors, Screen Arrangement, LEGO MINDSTORMS and Other Stuff palettes are not much used in the making of the application.

### 3.3.2 Concept Designs

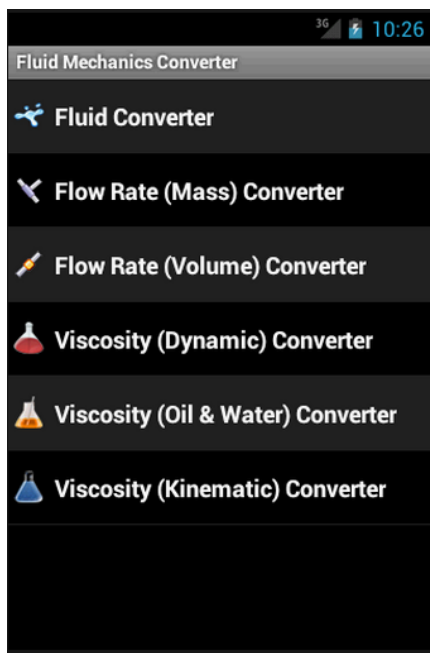
The application concept designs are referred to as much as from the ready product that are available in the Google Play.



**Figure 3.1:**Concept 1



**Figure 3.2:**Concept 2

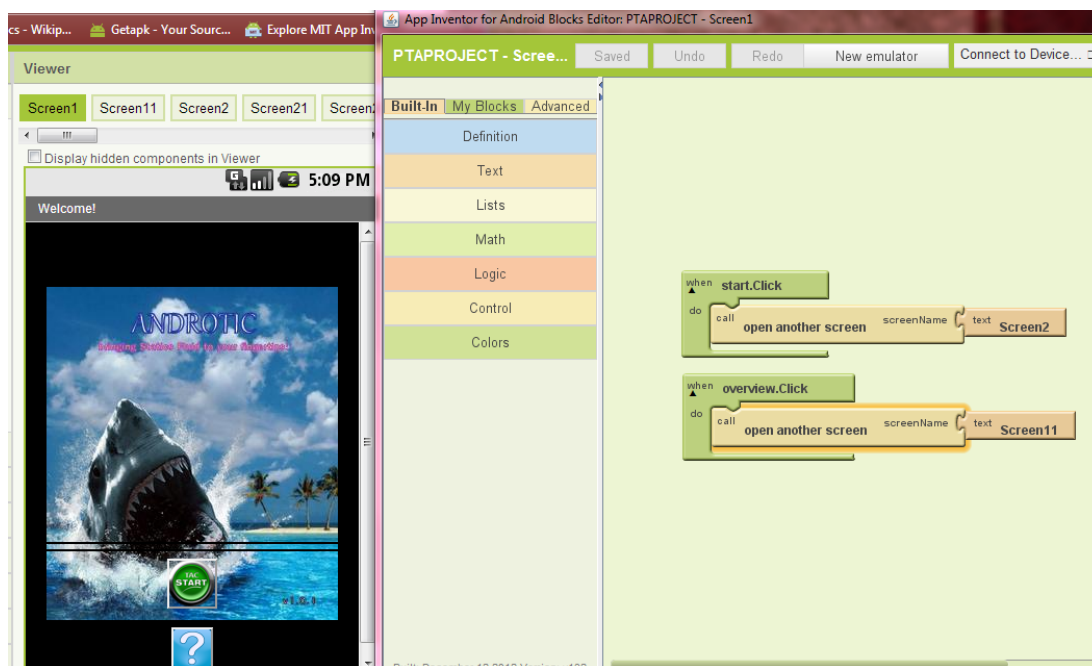


**Figure 3.3:**Concept 3



Figure 3.4: Concept 4

### 3.4 DESIGNING APPLICATION



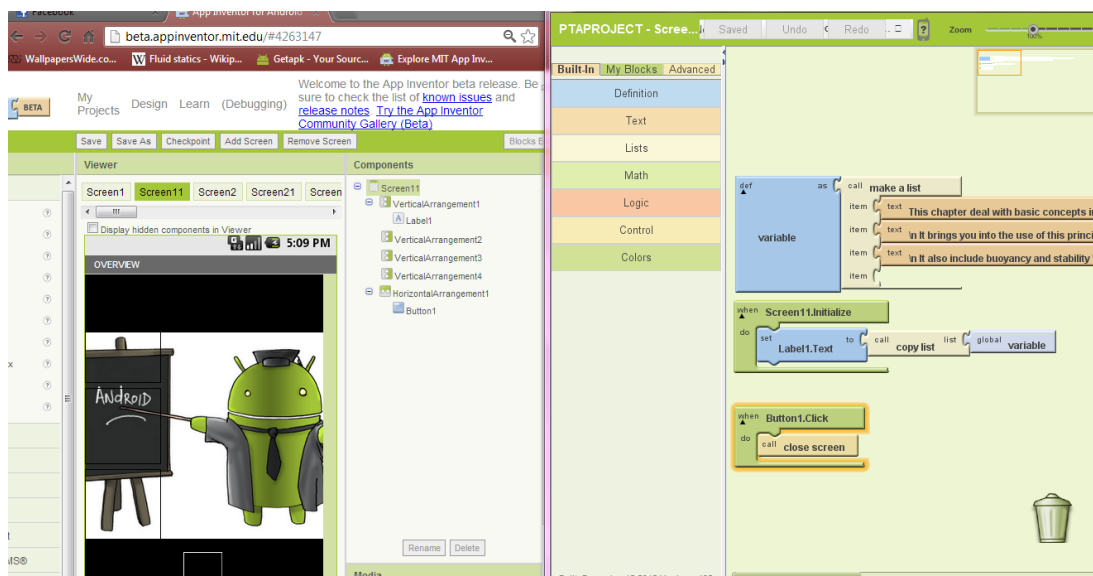
**Figure 3.5:** First Screen

Figure 3.5 shows how the design and the blocks coding are built initially. Start button and Help button appears just after one clicks on the application icon to open it. To build the buttons and get them function, “Button” palette is firstly dragged onto the designer screen. Drag button as many as one need it onto the screen. Shifting into how to make them function, go to the Blocks editor, click on My Blocks, select the button of its specific name, and then drag onto the Designer screen. For example, the Start button. Select Start button box which appears in My Blocks, then in the list, select Start.click and drag it onto the green-screen space. Click on any space on the green-screen, and then some boxes will appear, choose Control and select “open another screen”.

Second step is to match open another screen puzzle to Start.click. Click on the green screen again and choose “text”. Match text puzzle to open another screen puzzle. On the text puzzle, type the name of the desired screen to be open. As this is



done, it is actually making an instruction to the particular button to open the typed screen name on the text puzzle when the user touched the button.

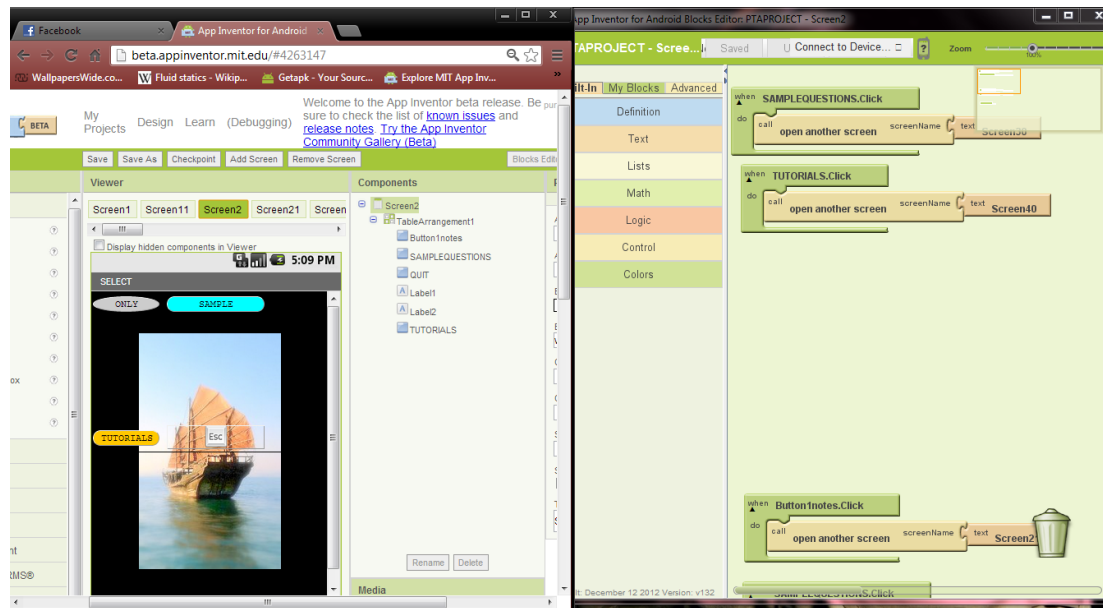


**Figure 3.6:** Overview Screen

Figure 3.6 is showing the second screen of the application. This screen has the “showing-the-text” function. To make the text appear on the screen, first of all drag the Label palette onto the designer.

Then get to the Blocks Editor. Click on Built-in, choose def variable and drag it out. Click on the screen, find list, choose make list and click on it. Match make a list puzzle to variable puzzle. Choose text puzzle or several of it and match to make list puzzle. On the text puzzle, write what is to be showed on the screen. To make a new line of texts paragraph, put “\n ” before the texts.

Then, find “when Screen1.Initialize puzzle. In My Blocks, get “set Label1.Text” and match it to Screen1.Initialize. Proceed with clicking on the screen, take list, copy list. In Built-in, find the global variable puzzle from Definition palette then match it to copy list puzzle. As these steps are completed, the screen will be able to appear on the particular screen only.



**Figure 3.7:** Menu Screen

On this screen, what is much to be discussed is the Screen Arrangement from the Designer window. Those buttons on this screen appear in form of a table. To make these features, choose Screen Arrangement, and drag Table Arrangement onto the screen. On the right side of the Designer, set the table rows and columns on the panel.

After the Screen Arrangement is ready, then only buttons are dragged into the Table Arrangement spaces. For a fit insert into the table boxes, put label palettes into empty boxes instead of leaving the boxes to appear closely from each other.

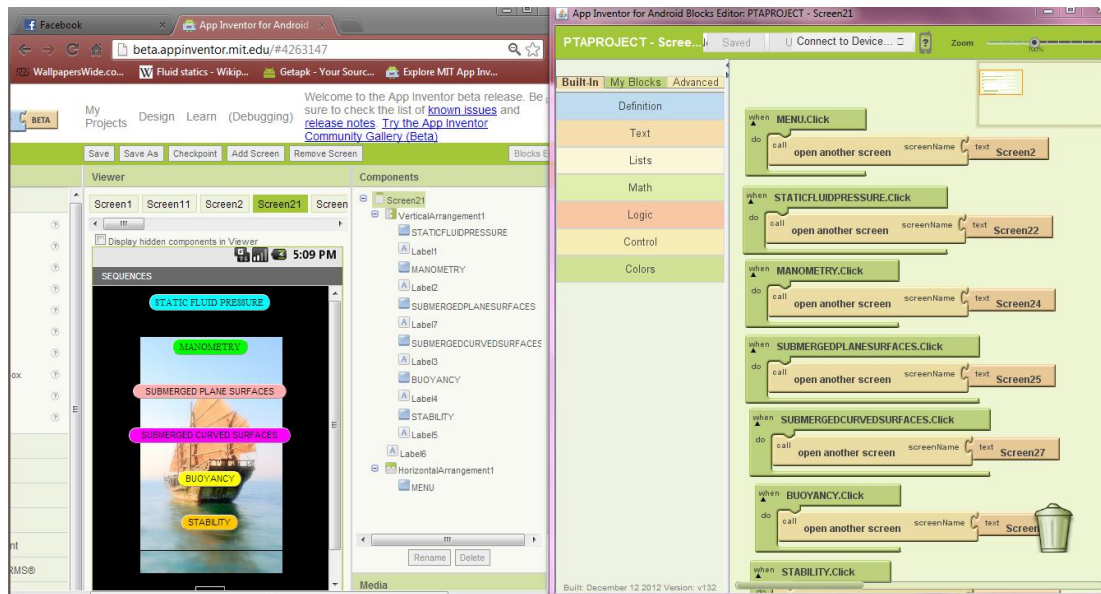


Figure 3.8: Notes Menu

This screen only shows typical features as the previous screen. But it is using the Vertical Screen Arrangement. Palettes dropped into the screen arrangement area will be arranged vertically. To change the buttons colour user can refer to the right side panel which shows many adjustable features. Those buttons are linked to other screens to be opened when touched.

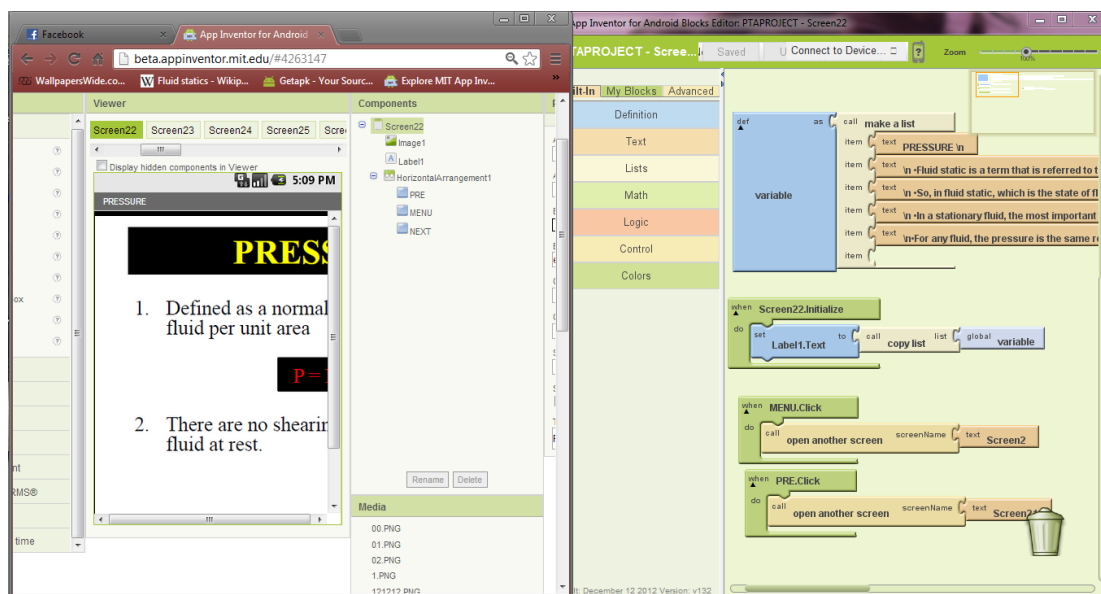
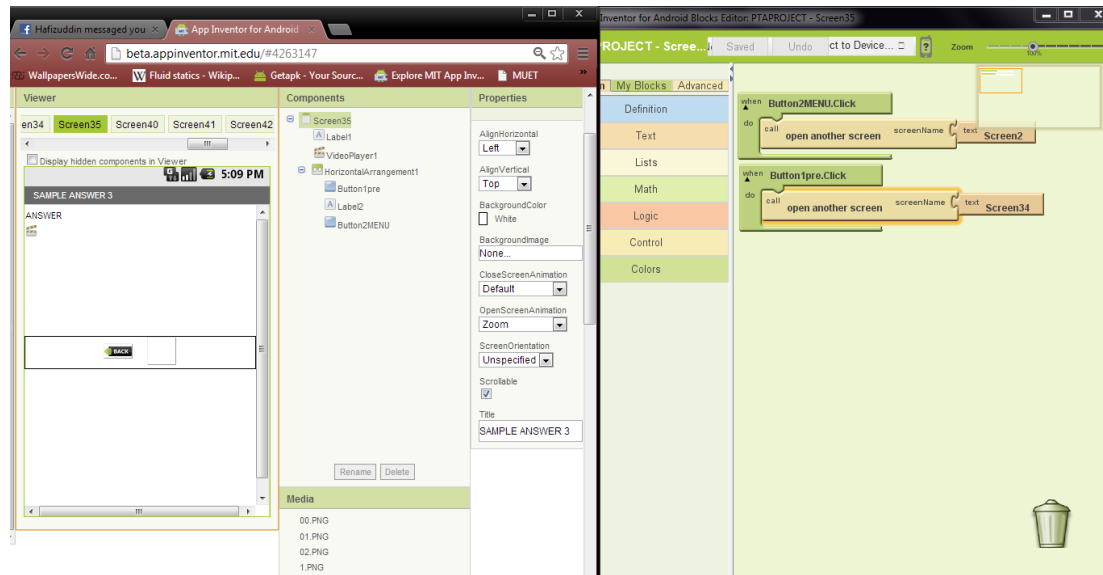


Figure 3.9: Notes Screen

This screen uses Image palette to show the notes. To make this happen, just drag Image palette onto Designer screen. Then, refer to right side panel and attach any image from computer to be uploaded and also to be displayed on the screen.



**Figure 3.10:** Screen with Video

In this screen, video is provided. To make this feature, drag Video from the Media group palette onto Designer screen. Then, attach a video file from your computer via the right side panel. The video is to be played automatically using the local smart phone video player. Buttons are to be considered as usual.

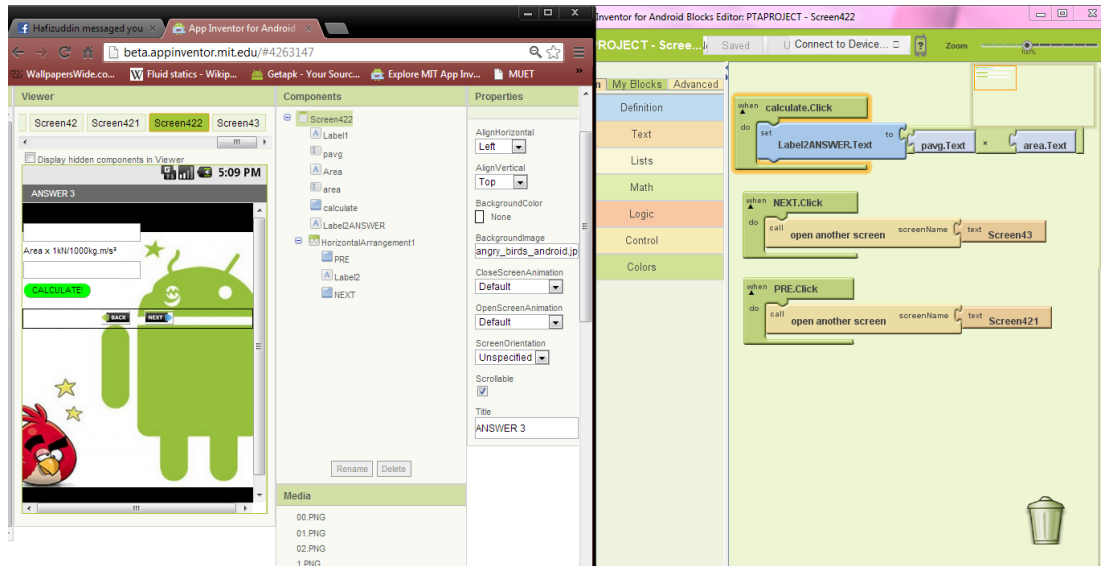


Figure 3.11: Calculator Screen

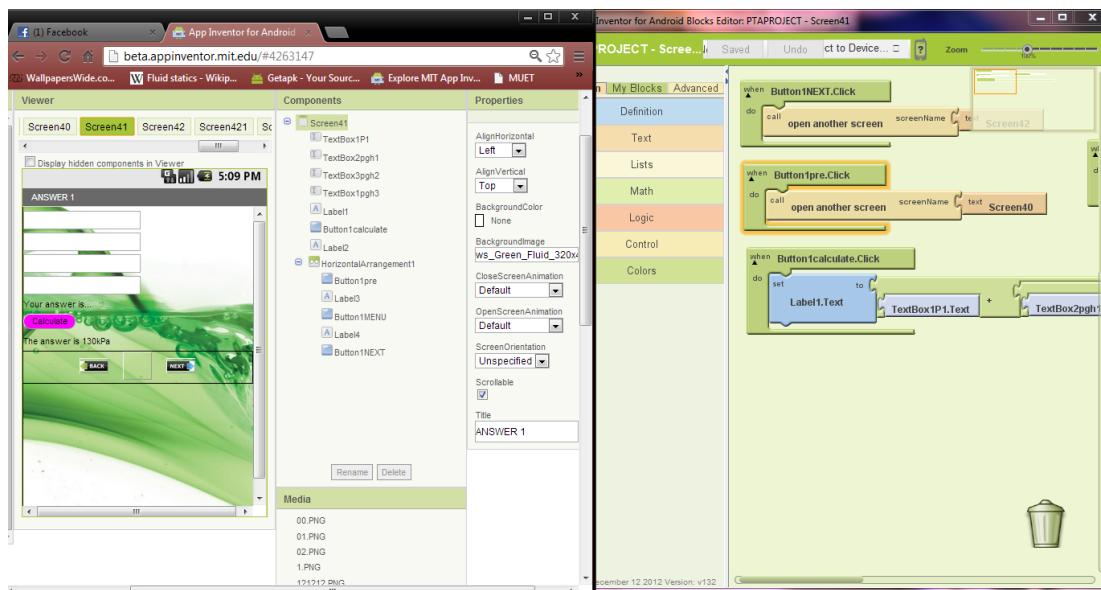


Figure 3.12: Calculator Screen 2

Here comes to the calculator. These two images showing screens of same function. The calculator is calculating unspecified value of number which means any number of any amounts could be inserted and it will calculate according to the setting of the formulae. The actual thing that is built is only the formulae which then formed as a calculator.

Let's take Figure 3.11 as an example. First step to be taken is dragging as much as the unknowns of the calculator where values are to be inserted into TextBox palettes. Also drag a Label where the answer will appear. Then, get a button which function to start the calculation after all values are inserted. From My Blocks, choose "Button1.click" and drag it out. In Built-in, choose "set Label1.text to" and match it to "Button1.click". Click on the green screen and choose "math". Choose "math" of desired operation. Then, find "Textbox1.Text" and put under math puzzle. Another Textbox2.Text is placed after the previous TextBox. This make the operation of Textbox1 plus TextBox2. The answer according to inserted value will be showed in "Label1".

There are many operations available in the math list. An operation that is solved first before the next operation is constructed by making a subset math puzzle match under the next puzzle of the second operation.

### **3.5 CONCLUSION**

So this chapter is telling about how the application is designed and built, then making it to be a complete application. The application mix notes, question, calculator, images, video and showing texts. That is how the application is built.

## CHAPTER 4

### RESULTS AND DISCUSSION

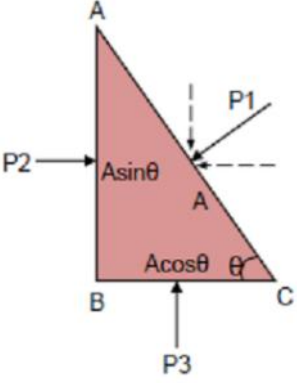
#### 4.1 INTRODUCTION

After finishing the project application, many of things are to be counted as results. For sure, the interfaces of screens are the most viewed things in this topic. Before this product is being released, it should be tested for satisfaction and the results are as discussed below.

#### 4.2 RESULTS



**Figure 4.1:** Welcome Screen



Consider a small triangular element ABC at a point in a fluid, if area AC is  $A$ , then area  $AB = A \sin \theta$  and area  $BC = A \cos \theta$ .

For horizontal equilibrium,

$$p_1 A \times \sin \theta = p_2 \times A \sin \theta$$

$$\therefore p_1 = p_2$$

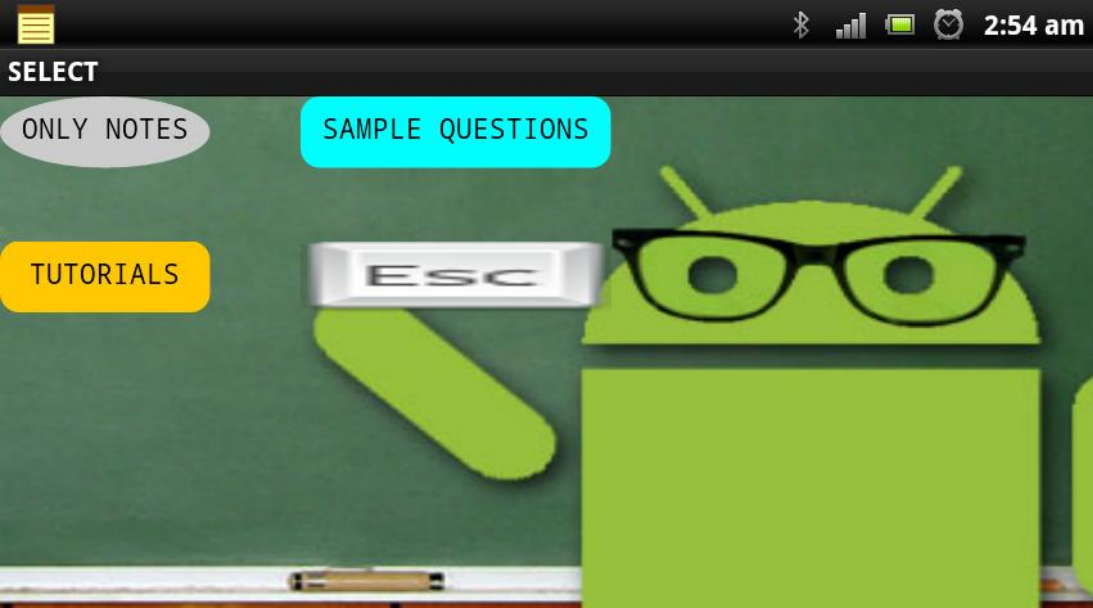
For vertical equilibrium,

$$p_1 A \times \cos \theta = p_2 \times A \cos \theta$$

$$\therefore p_1 = p_3$$

Thus, the pressure at any point in a fluid is the

Figure 4.2: Note Screen



SELECT

ONLY NOTES

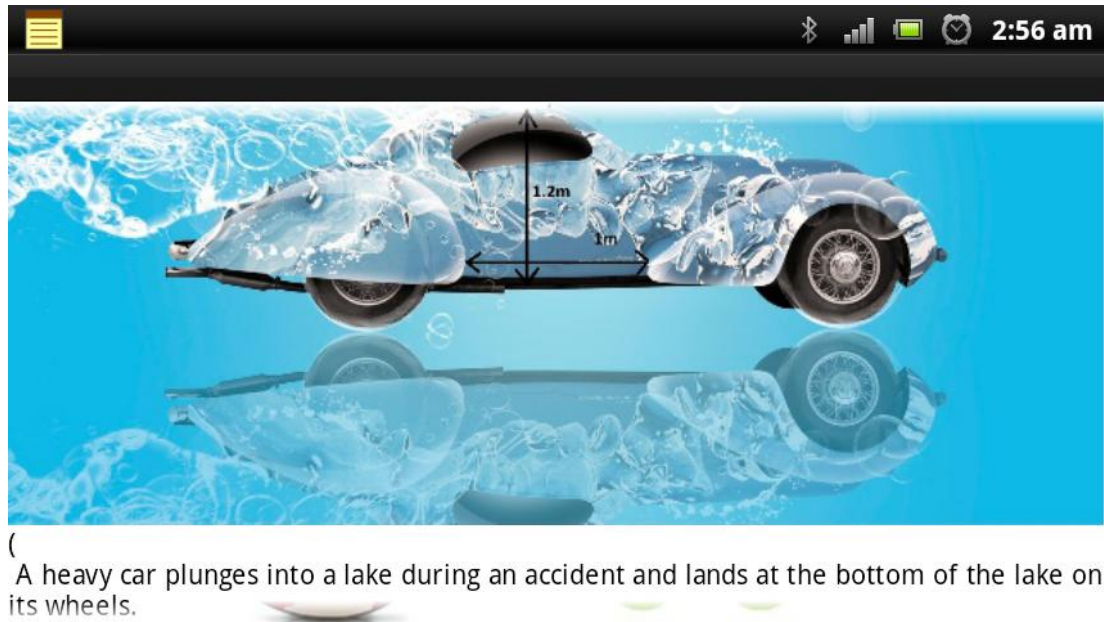
SAMPLE QUESTIONS

TUTORIALS

Esc

Figure 4.3: Menu Screen



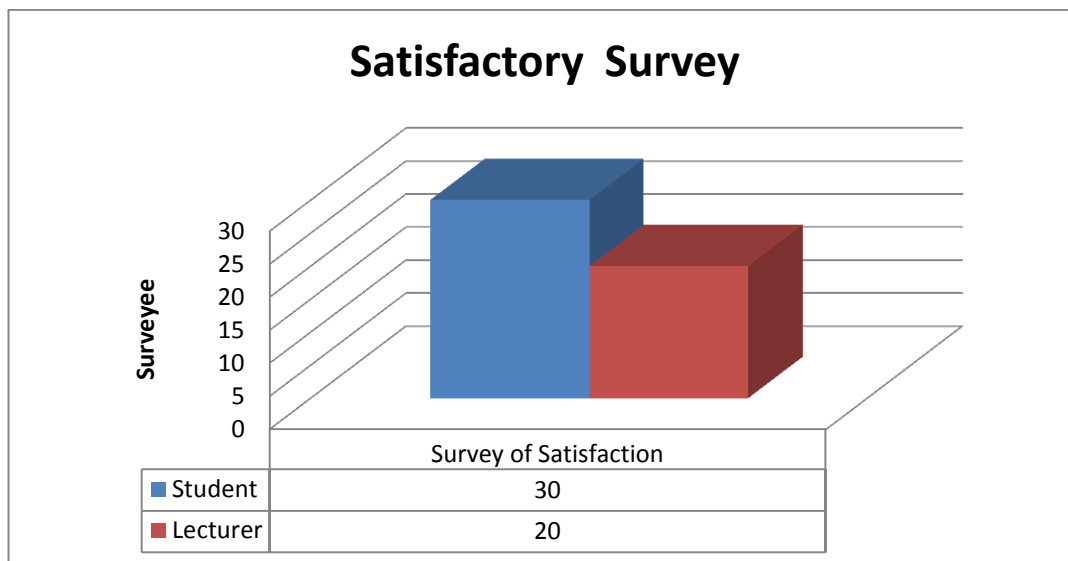


**Figure 4.4:** Question Screen

### 4.3 SATISFACTORY SURVEY RESULTS

After the final design is decided, survey forms are distributed and surveyed for satisfaction through number of users that are likely in the engineering field, which know Static Fluid such as Mechanical and Manufacturing Engineering people. Survey form, survey result data and number of respondents is recorded in the chart below.

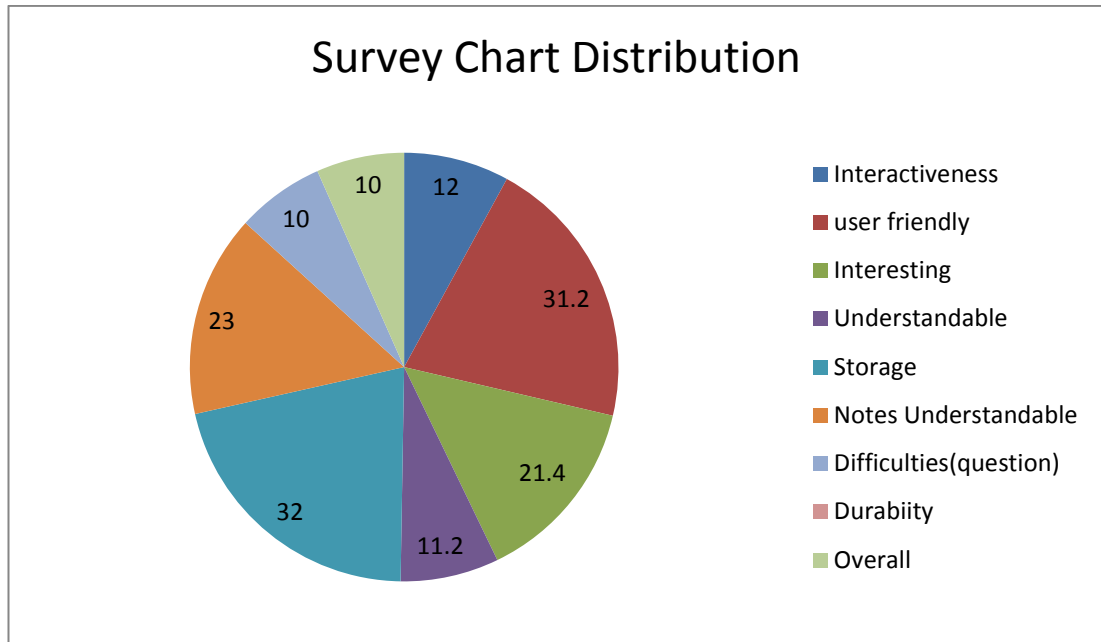




**Figure 4.6:** Survey Result

As we can see, student is to be 3times more surveyed than lecturers. This is because the target user is the student and thank God there are many student who respond positively during the survey session. People seems to look excited with such product, as it is our original version of project, and some of them have no idea how is the project is suggested to be real. Thanks a lot to the lecturer and supervisor whose have built the brilliant idea of this.

Survey form also includes comments of the product which help us to do the troubleshooting. The survey contains 10 criteria to be rated, which are interactiveness, user friendly, interesting, understandable, storage, notes understanding, level of difficulties of question, durability, overall and comments. Rating of criteria is reviewed in the chart below.

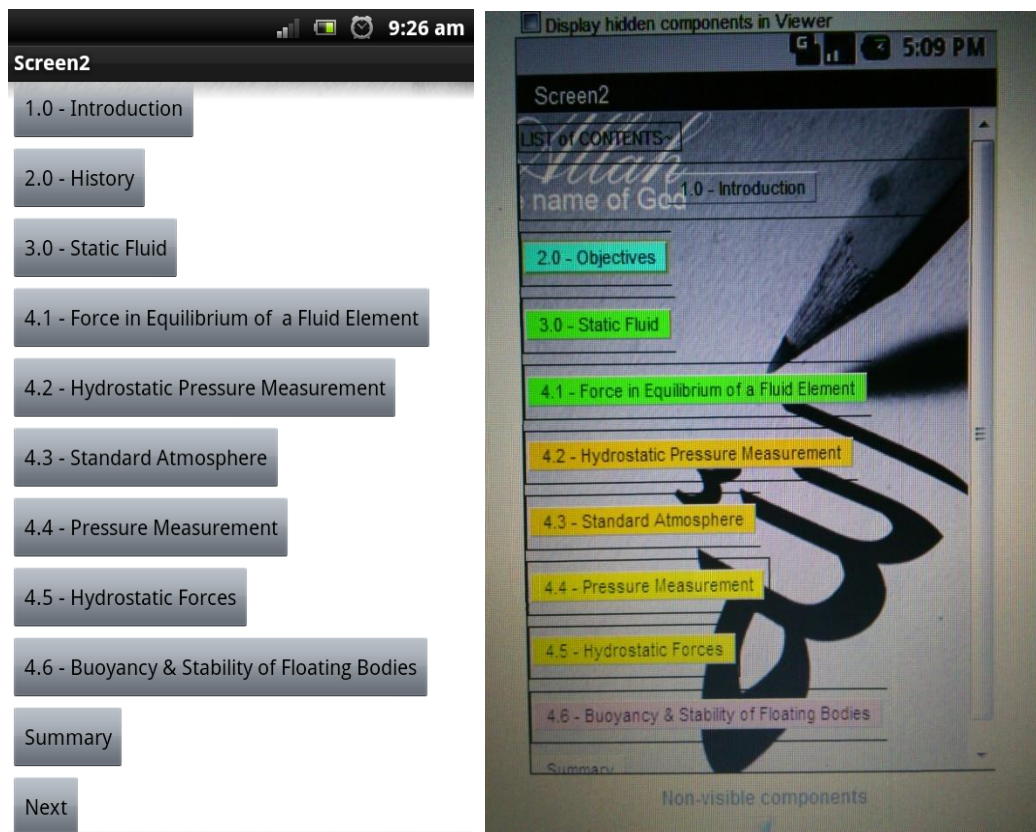


**Figure 4.7:** Survey Chart with Data

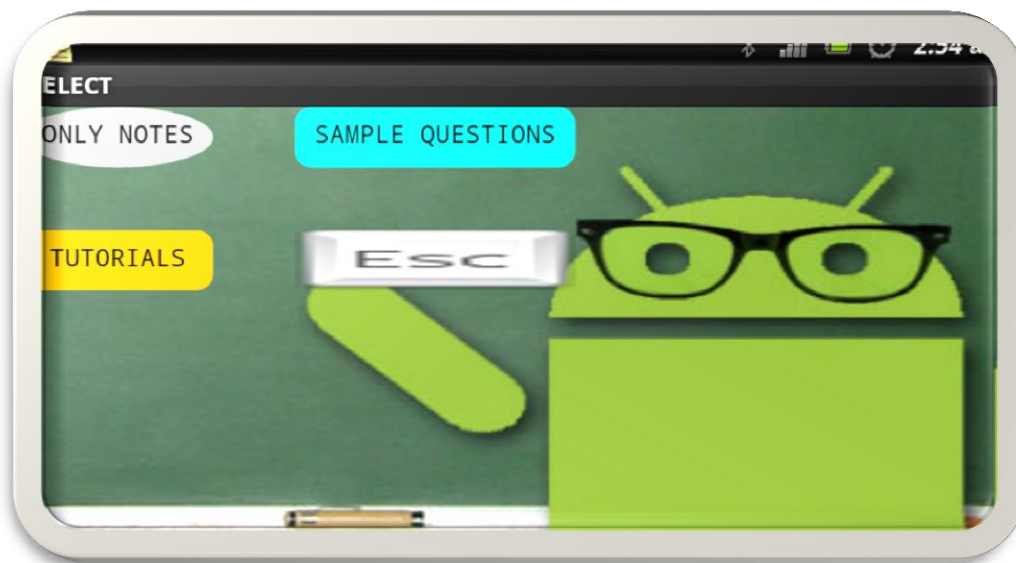
As we can see, criteria with lowest rating are difficulties of question and notes. Thus, we have rebuilt some of the features of the application to be more interesting in order to feed to customer's "appetite". This is done in order to reach the customer needs which are stated in the early days of making the project.

#### **4.4 PROJECT TROUBLESHOOTING**

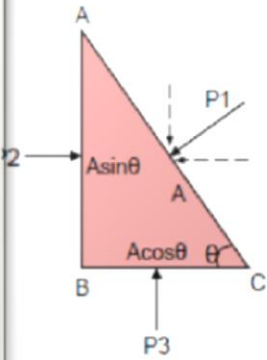
The troubleshooting is held trough several hard days of repairing and reconstructing the project based on the survey form results. Thank God, those days are worthily spent with some differences in the interface of the project application.



**Figure 4.8:** Screens before Troubleshooting



**Figure 4.9 :** Menu Screen After Troubleshooting



Consider a small triangular element ABC at a point in a fluid, if area AC is  $A$ , then area  $AB = A \sin \theta$  and area  $BC = A \cos \theta$ .

For horizontal equilibrium,

$$p_1 A \times \sin \theta = p_2 \times A \sin \theta$$

$$\therefore p_1 = p_2$$

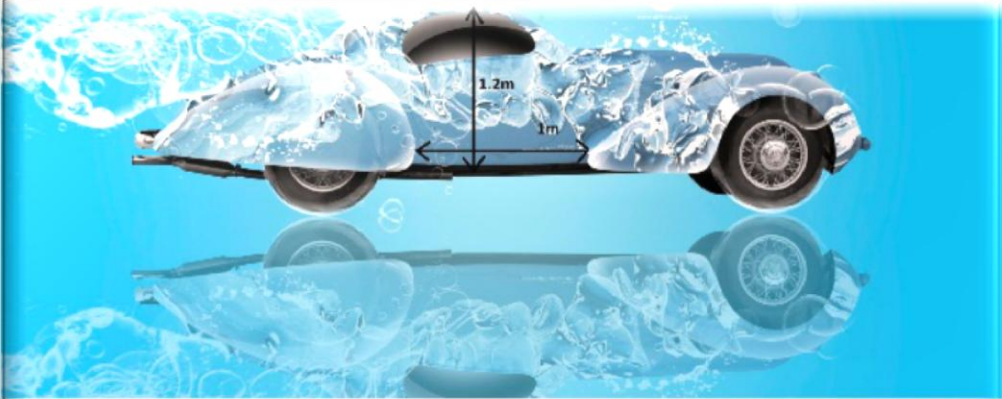
For vertical equilibrium,

$$p_1 A \times \cos \theta = p_2 \times A \cos \theta$$

$$\therefore p_1 = p_3$$

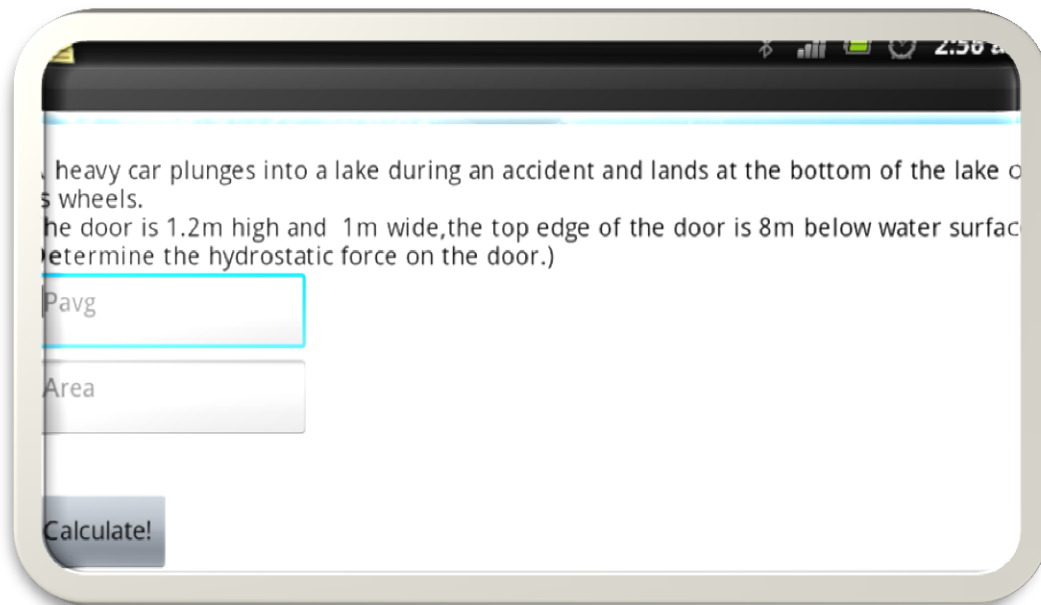
Thus, the pressure at any point in a fluid is the same in all directions.

**Figure 4.10** : Notes Screen After Troubleshooting



heavy car plunges into a lake during an accident and lands at the bottom of the lake. The car is shown in the image.

**Figure 4.11**: Question Screen After Troubleshooting



**Figure 4.12:** Calculator Screen After Troubleshooting

**Figure 4.9-4.12** are the screenshots of recreated screens design considering the criteria from the survey. We are keen on making this application to be more interesting and fashionable as far as we could.

#### 4.5 CONCLUSION

By doing the survey, we have done the troubleshooting session which include the survey results in reconstructing the application. For many cases, people rates and comments on the features, which are shown reconstructed in figures above. Working harder and harder shows more satisfaction of user when approached out of the survey. Thus, we are considering upgrading the project from time to time. Glad and thankful, we are closer to achieve our goal.

## **CHAPTER 5**

### **CONCLUSION**

#### **5.1 INTRODUCTION**

As our project is considered done, we are closing the thesis of the project with some conclusion. This chapter presents overall conclusion of consumption of time spent, overall process, some result, and credits.

#### **5.2 RECOMMENDATION AND IMPROVEMENT**

From time to time, we are keen on making the application to be more attractive and more practical in terms of usage and user interface. With more practical application, more users would be attracted. If any person would like to pursue such kind of project in the future, here are some recommendations for him/her.

For some reasons, Google AppInventor is not that good to be used as the software to create android applications. This is because there are some lack in the Google AppInventor software related to working capability, marketing process, storage capacity (application), variety of application features and some more problems.

Google AppInventor software is an online software which require a good internet connection while working on it. If not, changing screens, creating puzzle blocks coding, uploading medias, saving works, compiling parts and downloading the created applications may throw in problems because of the slow internet



connection. For better working experience, try to use SDK Android but please be prepared with the coding knowledge first.

Related to the marketing process problem, it is because applications created using AppInventor software are unable to be placed in Google Market or Google Play Store.

In addition, Google AppInventor also limits the application created using it to be 5MB and below in capacity. Thus, application designer may not able to insert more medias.

As long as we are working with the software, we were failed to find zoom feature, swipe screen feature and some more. In reality, people do ask about these features as it is may be the main priority of some person when using android application. Some people may not see the text clearly so zoom feature is vitally needed. Thus, try to find another android software which offers more features.

### **5.3 CONCLUSION**

Glad to finish this Final Year Project with this exciting Androtic application, we are saying that our objectives are achieved. Many thanks to all party which official and unofficially involved in completing this project. This project is a very useful and exciting experienced to get through, which may add many new useful knowledge in pursuing the rest of this life.

## REFERENCES

- 1) <http://appinventor.mit.edu/explore/>
- 2) [http://en.wikipedia.org/wiki/Android\\_version\\_history](http://en.wikipedia.org/wiki/Android_version_history)
- 3) <https://play.google.com/store/search?q=fluid+mechanics&c=apps&start=0&num=24>
- 4) [https://play.google.com/store/apps/details?id=com.acs.fluidmechanics&feature=search\\_result](https://play.google.com/store/apps/details?id=com.acs.fluidmechanics&feature=search_result)
- 5) [https://play.google.com/store/apps/details?id=an.FluidEbook&feature=search\\_result](https://play.google.com/store/apps/details?id=an.FluidEbook&feature=search_result)
- 6) [https://play.google.com/store/apps/details?id=com.phonegap.fluidmech1&feature=search\\_result](https://play.google.com/store/apps/details?id=com.phonegap.fluidmech1&feature=search_result)
- 7) [https://play.google.com/store/apps/details?id=com.sis.fluidmechanicscalc&feature=search\\_result](https://play.google.com/store/apps/details?id=com.sis.fluidmechanicscalc&feature=search_result)
- 8) [https://play.google.com/store/apps/details?id=com.sis.FluidMechanicsPack&feature=search\\_result](https://play.google.com/store/apps/details?id=com.sis.FluidMechanicsPack&feature=search_result)
- 9) [http://en.wikipedia.org/wiki/APK\\_\(file\\_format\)](http://en.wikipedia.org/wiki/APK_(file_format))

# APPENDIX

## PROJECT SCHEDULE

WEEK		1	2	3	4	5	6	7	8	9	10	11	12	13	14
DISCUSSION REGARDING THE PROJECT	PLAN														
	ACTUAL														
MEETING SUPERVISOR	PLAN														
	ACTUAL														
SKETCH AND DESIGN IDEAS	PLAN														
	ACTUAL														
DESIGNING PROCESS	PLAN														
	ACTUAL														
SLIDE FOR FIRST PRESENTATION	PLAN														
	ACTUAL														
FIRST PRESENTATION	PLAN														
	ACTUAL														
SURVEY AND TROUBLESHOOTING	PLAN														
	ACTUAL														
MAKING FINAL SLIDE	PLAN														
	ACTUAL														
FINAL TOUCH AND PRESENTATION	PLAN														
	ACTUAL														
FINAL REPORT	PLAN														
	ACTUAL														

**APPLICATION FLOWCHART**

