

# MAKEUP APPLICATION BASED ON SKIN COLOUR

NURUL AHZANI BINTI ROSLAN

BACHELOR OF SOFTWARE ENGINEERING WITH HONORS

UNIVERSITI MALAYSIA PAHANG



## **SUPERVISOR'S DECLARATION**

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering) with Honours.

A handwritten signature in black ink, appearing to be 'Puan Fauziah Binti Zainuddin', is written over a horizontal line.

(Supervisor's Signature)

Full Name: PUAN FAUZIAH BINTI ZAINUDDIN  
Position: SUPERVISOR  
Date: 27/5/2019



## STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at University Malaysia Pahang or any other institutions.

A handwritten signature in black ink, appearing to read 'Nurul Ahzani Binti Roslan', is written over a horizontal line.

(Student's Signature)

Full Name : NURUL AHZANI BINTI ROSLAN  
ID Number : CB15042  
Date : 27/5/2019

# MAKEUP APPLICATION BASED ON SKIN COLOUR

NURUL AHZANI BINTI ROSLAN

Faculty of Computer System & Software Engineering

UNIVERSITI MALAYSIA PAHANG

## **ACKNOWLEDGEMENTS**

First of all, I would like to express my sincerest thanks to my supervisor, Pn.Fauziah Binti Zainuddin, who always supported and supervised me throughout my thesis with her patient along two semester for Final Year Project Course. I love her spirit who always make me stronger when I am down during the finishing of this project.

Secondly, I would like to thanks to my family to keep encourage me to finish this thesis successfully. They also the one that always give me encouragement when I am down during the finishing of this thesis.

Lastly, I would like to thank to my friends that helped me a lot on this project from beginning and to everyone that helping me directly and indirectly. Also, thanks to my client Yusra Aqilah Bt Rozali for helped me to share her knowledge to me until I manage to finish my project.

## **ABSTRAK**

Pada masa kini, masih terdapat beberapa wanita yang masih tidak tahu cara untuk memakai solekkan. Ini kerana, mereka tidak tahu warna yang sesuai dengan tona kulit mereka. Aplikasi ini adalah untuk menjadi panduan kepada pengguna untuk memilih warna dengan lebih bijak. Ini kerana, aplikasi ini telah menyusun warna berdasarkan tona kulit. Aplikasi ini mengandungi empat jenis tona kulit seperti kulit cerah, kulit kuning langsung, kulit sawo matang dan kulit hitam manis. Dalam setiap tona warna diberikan tiga jenis bahan solekkan iaitu lipstik dan pemerah pipi. Aplikasi ini juga memberikan kepada pengguna untuk memilih rupa mereka sendiri sama ada neutral atau malam. Objektif aplikasi ini adalah untuk mengkaji dan mengenalpasti warna yang sesuai dengan tona warna, untuk merekabentuk dan membangunkan prototaip makeup aplikasi ini sebagai panduan untuk pengguna berdasarkan tona kulit mereka, dan untuk menilai keberkesanan aplikasi ini kepada pengguna. Pemabangunan Aplikasi Rapid (RAD) adalah metodologi yang digunakan untuk membangunkan aplikasi ini. RAD terdiri daripada empat fasa. Pertama adalah perancangan kualiti, diikuti dengan reka bentuk pengguna, pembinaan dan akhir sekali adalah pemotongan. Setelah selesai pembangunan, pelanggan akan diberikan ujian penerimaan pengguna (UAT) untuk memastikan semua fungsi berfungsi mengikut kehendak pelanggan tanpa sebarang kesilapan.

## **ABSTRACT**

Nowadays, there are some women they still did not know how to makeup. It is because they do not know which shade that is suitable to their skin tone. Makeup application is an application that can be as a guidance to user to choose makeup wisely. This application already sorts the shades of makeup based on skin tone. This application consists of four types of skin tone such as fair skin, medium skin, medium dark skin and dark skin. In each skin tone, user will be given two types of makeup which are lipstick and blusher. This application also will be given to choose look either neutral or night. The objective of this application is to study and identify the existing application in market, to design and develop a prototype for makeup application as a guidance for user to choose the right shade based on skin tone and to evaluate the effectiveness of this application for user. Rapid Application Development (RAD) is the methodology used to develop this application. RAD consists of four phases. First is requirement planning, followed by user design, construction and lastly is cutover. After finished development, client will be given the user acceptance test (UAT) to ensure that all the function work according to requirement without any error.

## TABLE OF CONTENT

<b>DECLARATION</b>	
<b>TITLE PAGE</b>	
<b>ACKNOWLEDGEMENTS</b>	<b>ii</b>
<b>ABSTRAK</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>TABLE OF CONTENT</b>	<b>v</b>
<b>LIST OF TABLEs</b>	<b>xi</b>
<b>LIST OF FIGURES</b>	<b>xii</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENT	3
1.3 OBJECTIVE	4
1.4 SCOPE	4
1.5 THESIS ORGANIZATION	4
<b>CHAPTER 2 LITERATURE REVIEW</b>	<b>5</b>
2.1 INTRODUCTION	5
2.2 EXISTING SYSTEM	5
2.2.1 YouCam Makeup	6
2.2.2 Make-Up me	8
2.2.3 Makeup Plus	9
2.2.4 Comparing Existing System	10



<b>CHAPTER 3 METHODOLOGY</b>	<b>12</b>
3.1 INTRODUCTION	12
3.2 RAPID APPLICATION DEVELOPMENT (RAD)	13
3.2.1 Requirement Planning	13
3.2.2 User Design	13
<b>3.1.1.1 Context Diagram</b>	<b>14</b>
<b>3.1.1.2 Use Case Diagram</b>	<b>15</b>
<b>3.1.1.3 Activity Diagram</b>	<b>16</b>
<b>3.1.1.4 Class Diagram</b>	<b>17</b>
<b>3.1.1.5 Entity Relationship Diagram (ERD)</b>	<b>18</b>
<b>3.1.1.6 Dialog Diagram</b>	<b>19</b>
3.2.3 Construction Phase	20
3.2.4 Cutover Phase	20
3.3 SOFTWARE AND HARDWARE SPECIFICATION	20
3.3.1 Software Item	20
3.3.2 Hardware Item	21
<b>CHAPTER 4 IMPLEMENTATION, TESTING, RESULT AND DISCUSSION</b>	<b>22</b>
4.1. INTRODUCTION	22
4.2 IMPLEMENTATION	22
4.2.1 Architecture	23
<b>4.1.1.1 Main Interface</b>	<b>23</b>
<b>4.1.1.2 Login Interface</b>	<b>24</b>
<b>4.1.1.3 Signup Interface</b>	<b>24</b>

<b>4.1.1.4</b>	<b>Look Interface</b>	<b>25</b>
<b>4.1.1.5</b>	<b>Skin Colour Interface</b>	<b>26</b>
<b>4.1.1.6</b>	<b>Fair Skin Interface</b>	<b>26</b>
4.2.2	Database Architecture	27
<b>4.2.2.1</b>	<b>Table and Coding in Database</b>	<b>27</b>
4.3	Testing and Result Discussion	30
4.3.1	Functional Testing	31
4.3.2	User Manual	33
4.3.3	Interface	34
<b>CHAPTER 5</b>	<b>CONCLUSION</b>	<b>38</b>
5.1	INTRODUCTION	38
5.2	LIMITATION	38
5.3	FUTURE WORK	38
5.4	CONCLUSION	39
<b>REFERENCES</b>		<b>40</b>
<b>APPENDIX A</b>		<b>41</b>
<b>DOCUMENT APPROVAL</b>		<b>42</b>
<b>TABLE OF CONTENT</b>		<b>43</b>
<b>LIST OF FIGURES</b>		<b>45</b>
<b>LIST OF TABLES</b>		<b>46</b>
<b>LIST OF APPENDIXS</b>		<b>47</b>

<b>1.</b>	<b>PRODUCT DESCRIPTION</b>	<b>48</b>
1.1.	USER CHARACTERISTICS	48
1.2.	CONSTRAINTS	48
<b>2.</b>	<b>INTERFACE REQUIREMENTS</b>	<b>49</b>
2.1	USER INTERFACE	49
2.2	HARDWARE INTERFACE	51
2.3	SOFTWARE INTERFACE	51
<b>3.0</b>	<b>SPECIFIC REQUIREMENTS</b>	<b>52</b>
5.5	3.1 Software Product Features	52
	3.1.1 Manage Registration	52
	3.1.2 Manage Skin Colour	54
	3.1.3 Manage Looks	56
	3.1.4 Manage Makeup	58
<b>4.0</b>	<b>REQUIREMENT TRACEABILITY</b>	<b>60</b>
	<b>APPENDIX A</b>	<b>63</b>
	<b>APPENDIX B</b>	<b>68</b>
	<b>TABLE OF CONTENTS</b>	<b>69</b>
	<b>LIST OF FIGURES</b>	<b>71</b>
	<b>LIST OF TABLES</b>	<b>72</b>
	<b>LIST OF APPENDIXS</b>	<b>73</b>

<b>1.</b>	<b>DATA DICTIONARY</b>	<b>74</b>
	Data dictionary provides information about database. It contains attributes name, description of attributes, data types of attributes, required attributes table, primary key (PK) and foreign key (FK) of the table, and FK reference tables.	74
1.1.1	User	74
5.6	1.1.2 Looks	74
5.7	1.1.3 Skin Colour	75
5.8	1.1.4 Makeup	75
<b>2.0</b>	<b>PERLIMINARY DESIGN</b>	<b>76</b>
<b>2.1</b>	<b>SYSTEM ARCHITECTURE</b>	<b>76</b>
5.9	2.1.1 Static Organization	76
5.10	2.1.2 Dynamic Organization	78
<b>3.</b>	<b>DETAIL DESIGN</b>	<b>79</b>
3.1	Makeup Application Management	79
	3.1.1 Manage Registration	79
	3.1.2 Manage Look	82
	3.1.3 Manage Skin Colour	85
	3.1.4 Manage Makeup	87
	<b>APPENDIX A</b>	<b>91</b>
	<b>APPENDIX C</b>	<b>96</b>
	<b>APPENDIX D</b>	<b>99</b>
	<b>APPENDIX E</b>	<b>101</b>



## LIST OF TABLES

Table 2.1	Comparison of Existing System in term of Feature, Advantages and disadvantages	10
Table 3.7	Software item	20
Table 3.8	Hardware item	21

## LIST OF FIGURES

Figure 2.1	Real-Time Makeovers	6
Figure 2.2	Skincare AR	7
Figure 2.3	Face Detection & Tracking	7
Figure 2.4	Example interface that need user drag and drop	8
Figure 2.5	Virtual Beauty Counter	9
Figure 3.1	Rapid Application Development (RAD) Model	12
Figure 3.2	Context Diagram of Makeup Application	14
Figure 3.3	Use Case Diagram	15
Figure 3.4	Activity Diagram	16
Figure 3.5	Class Diagram	17
Figure 3.6	Entity Relationship Diagram	18
Figure 3.7	Dialog Diagram	19
Figure 4.1	Creating Main Interface for Makeup Application	23
Figure 4.2	Creating Login Interface for Makeup Application	24
Figure 4.3	Creating Sign up Interface for Makeup Application	25
Figure 4.4	Creating Look Interface for Makeup Application	25
Figure 4.5	Creating Skin colour Interface for Makeup Application	26
Figure 4.6	Creating Fair skin Interface for Makeup Application	26
Figure 4.7	Create Database in SQLite	27
Figure 4.8	Database query	28

Figure 4.9	INSERT query	29
Figure 4.10	Database in DB Browser	29
Figure 4.11	Result of Usability Test Age	32
Figure 4.12	Result of Usability Test Gender	32
Figure 4.13	Main Page for Makeup Application	34
Figure 4.14	Makeup Application Log in Page	34
Figure 4.15	Makeup Application sign up page	35
Figure 4.16	Makeup Application look interface	35
Figure 4.17	Makeup Application Skin colour Interface	36
Figure 4.18	Makeup Application Neutral Fair Skin Page	36
Figure 4.19	Makeup Application Lipstick Fair Skin Page	37
Figure 4.20	Makeup Application Blusher Fair Skin Page	37



## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

Nowadays makeup already being a part for woman. From the observation there are a lot of tutorial makeup on Instagram, Facebook and YouTube, so that why makeup plays an important role for woman. Not only for beautify herself, makeup also have a function to make her skin looks better. Also, makeup is used as a beauty aid to help build up the self-esteem and confidence of and individual. Another reason why women love to makeup is because they want to stay young and attractive and makeup can give protection from harmful rays of sun. Basically, all cosmetic is available in multitudes colour shade, but not every shade or colour will look the most suitable on each person. In this project, the application will able to advice women to find suitable colours according to their skin tones.

Based on my client Yusra Aqila is one of freelance makeup artist in Kuantan, she always faces many kinds of problem. For example, when she is doing makeup on social media which are, they makeup in Instagram live or Facebook live sometimes she got a few questions that related with their skin colour. For example, “I have this kind of skin colour, so what brand or which code that really suitable for me”. For makeup artist or people who expert in makeup also cannot answer that question because she did not see that people in real life, but makeup artist still can suggest but not the exactly answer.

Since application that related with skin tone are yet to be found. Makeup Application is a guidance for the user to choose colour that suitable for the skin colour. In market now there are a lot of colour on drugstore or makeup market so it will be hard to find the right shade. This application only used one local makeup brand which is Mary Kay as a reference for the colour. Makeup Application used two types of makeup for the lipsticks which are Gel Semi-Matte lipstick for neutral look and Gel Semi-Shine lipstick for night because to give more effect on night.

To use this application, firstly user need select which looks user want because it easier to sort the suitable colour based on look user choose. Next, user need to choose what type of skin colour either fair skin, medium skin, medium dark skin or dark skin. After choose skin colour, user will click either lipstick button or blusher button to see the colour.

## 1.2 PROBLEM STATEMENT

No available application at the moment, we can see there a lot of existing application about makeup in Play store or App store but it are more to children's game and also there is application that need user to selfie, after that this app will came out with a multitude of colour, so user can choose any kind of colour that the user want but not the suitable for their skin tone. The problem is the application that really focus on how to choose the suitable colour based on their skin yet to be found in Play store for android and App store for iOS.

Second problem, there are so many makeup artists on social media doing makeup tutorial using Facebook live, Instagram live or share their works on social media. After that, the makeup artist will be doing the makeup class to teach how to makeup in right way with a suitable colour cosmetic. The price for one class is RM200 and above because the brand of cosmetics that they are using. Next, the location for doing makeup class. Example the customer stays in Kuantan but the venue at Kuala Lumpur and because certain places there is no makeup artist, or the customer not trusted to that makeup artist. We must identify the problem is to join one makeup class is costing RM 200 where it is very expensive, especially for student who want to join that class. Also, the location for makeup class is too far and need a huge budget to go there.

Third problem, this situation always happened to every woman who punctual and very fix with her time. It is because career women and not only for career women but other women also. They always want to look beautiful especially women who works in office, go to wedding, attend invitation for big event etc. So, they always want to make sure their makeup looks very nice and every day have difference kind of looks. The problem is they have problem to choose the colour especially for eyeshadow and lipstick. They want to mix and match with the colour but of course it takes longer time and at the end they always go for neutral makeup which is nude colour because nude colour is very in trend right now, simple, easy and can match with another colour.

## REFERENCES

information@eso.org, “A short introduction to astronomical image processing,” *ESA/Hubble / ESA/Hubble*. [Online]. Available: [https://www.spacetelescope.org/projects/fits\\_liberator/improc/](https://www.spacetelescope.org/projects/fits_liberator/improc/). [Accessed: 04-May-2018].

“MakeupPlus - Your Own Virtual Makeup Artist - Apps on Google Play,” *Google*. [Online]. Available: <https://play.google.com/store/apps/details?id=com.meitu.makeup>. [Accessed: 04-May-2018].

“YouCam Makeup - Magic Selfie Makeovers - Apps on Google Play,” *Google*. [Online]. Available: <https://play.google.com/store/apps/details?id=com.cyberlink.youcammakeup>. [Accessed: 04-May-2018].

“Make-Up Me - Apps on Google Play,” *Google*. [Online]. Available: <https://play.google.com/store/apps/details?id=com.libiitech.makeup>. [Accessed: 04-May-2018].

“Rapid Application Development Model: definition and stages,” *The App Solutions*. [Online]. Available: <https://theappsolutions.com/blog/development/rad-model/>. [Accessed: 04-May-2018].

Aundrea, Steve, O. Mirco, Naziya, Bindast, T. Donnelly, and Keren, “Home,” *ISTQB Exam Certification*. [Online]. Available: <http://istqbexamcertification.com/what-is-rad-model-advantages-disadvantages-and-when-to-use-it/>. [Accessed: 04-May-2018].