GRADE 12 IT PAT Phase 4 2020

Figure 1 (School, 2017)



Figure 2 (Coetzee, 2018)

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# Externally Sourced Code

Whilst completing phase 3 of my PAT, I have included code which was found externally to make my program work better.

## The Database Manager Class

This class is used to access and modify my tables in the Access Database, my IT teacher provided the class needed to connect to the database.

Text

Description automatically generated

This class was used to allow the connection between my manager classes and tables so the program could access the data and function properly.

# Explanations of Critical Algorithms

## Creating a booking

**Pseudocode (This procedure takes place over many screens, but the basic algorithm is below):**

First Screen (SelectBookingScreen)

When Display

Begin

String Date 3 days later

String [ ] Hours Available hours (10:00, 11:00, 12:00, 14:00, 16:00)

If BirthCertificate & CopyID is null

Begin if

Table filled with available times

Booking time added

Type added

end if

else if CopyID is null

begin if

Table filled with available times

Booking time added

Type added

end if

else if ParentID is null

begin if

Table filled with available times

Booking time added

Type added

end if

end else

end else

End

When ContinueButtonActionPerformed

Begin

If BirthCertificate & CopyID is null

Begin if

Add UnabridgedBirthcertificate

change to ActionPerformedScreen

end if

else if CopyID is null

begin if

add SmartID

change to ActionPerformedScreen

end if

else if ParentID is null

begin if

add Passport

change to ActionPerformedScreen

end if

end else

end else

End

## Explanation:

For the Online Home Affairs to exist and run, booking need to be able to be made and carried out. This function is the main part of the function as without it the program would be useless as you would not be able to book online for Home Affairs which is the main point of it. Without bookings, full use of this program would not be available, and the program would not be continued. Therefore, it is critical that bookings can be made and added to the database. The above code deals with choosing a booking and ensuring the correct database is selected according to the fields.

## Booking a SmartID

**Pseudocode:**

**First Screen (SmartIDScreen)**

When ContinueActionPerformed

Begin

If ID and password corresponds in database

Begin if

If checkbox is checked

Begin if

Change screen to SmartID3Screen

End if

Else

Begin else

Change screen to SmartID2Screen

End else

End if

End if

Else

Begin else

Display ‘Incorrect details’ in red

End else

End

**Second Screen (SmartID2)**

When ContinueActionPerformed

Begin

If File F is not null

Begin if

Change to SmartID4 screen

End if

Else

Begin else

Display ‘Please Upload a File’ in red

End else

End

**Third Screen (SmartID3)**

When ContinueActionPerformed

Begin

If File F is not null

Begin if

Change to SmartID2 screen

End if

Else

Begin else

Display ‘Please Upload a File’ in red

End else

End

**Fourth Screen (SmartID4)**

When ContinueActionPerformed

Begin

If File F is not null

Begin if

Change to SmartID5 screen

End if

Else

Begin else

Display ‘Please Upload a File’ in red

End else

End

**Fifth Screen (SmartID5)**

When ContinueActionPerformed

Begin

If File F is not null

Begin if

Change to SelectBooking screen

End if

Else

Begin else

Display ‘Please Upload a File’ in red

End else

End

## Explanation:

As an Online Home Affairs, it is very important that the Applicant can choose what he is booking an appointment for and that the applicant can enter the information and data needed for that category. The whole reason for an Online Home Affairs is that it is able to help reduce the traffic and congestion at Home Affairs, by entering your information, all the photos you need and choosing a time to book the Home Affairs office will be able to run much smoother and more effectively. I have used the SmartID booking as the example as it requires the most input, but the Passport and Unabridged Birth Certificate both run in the same manner and just require different photos and pieces of information. This algorithm is vitally important as without it the reason for having an Online Home Affairs would be highly ineffective and most people would rather just go to Home Affairs instead of using the online site. For this reason, this algorithm is an integral and critical part of the Online Home Affairs program.

# Advanced Techniques

In my PAT, I used some advanced techniques to ensure the applicant has a smooth and successful experience with my program.

## Menu Bars

To increase the user-friendliness of my program, I have added menu bars to my programs, as many apps and websites have menu bars and so most users know how to use it. This therefore improves the GUI by cleaning up the screen and getting rid of unnecessary repetition of buttons.

## Ghost Text

To increase the user-friendliness of my program, I used ghost text to show the user what is expected as input types, it will show the user the type of text needed, and will remove itself when clicked on so that the user can write their own information. Using this will decrease the number of errors made by the applicants.

## Help Button

To create the most user-friendly and effective help screen, I created a website purely purposed on helping applicants with any problems they are busy facing. It is easy for an applicant to use as clicking the button will immediately take them to the website where a live chat is available for online assistance or a PDF is available that explains each screen and how it works.

## Using photos

To make Online Home Affairs more effective, I allowed applicants to retrieve photos from their computers storage and stored it in a database to be used on the date of the booking. This would reduce the time spent at Home Affairs, reducing the lines and congestion significantly! I also set it to only use Image files to reduce errors performed by the applicant.

# Test Plan and Results

When I tested my program, I used three different types of data where user interaction was required to examine the results. I used normal data, extreme data, and abnormal data. Normal data is what the program is expected to deal with. Extreme data is like normal data but is long or large in a way that is more than what the program expects. Abnormal data is data that does not match with the data expected by the program. Below the test data and results are shown:

## Login Screen

This screen is used to check the authenticity of the applicant or staff member entering the site. This screen required an ID and a password to get in:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Number | Input | Normal | Extreme | Abnormal |
| 1 | ID Number | 0201125085084 | 0000000000000 | H! |
| 2 | Password | Byron123 | BBB111123232112212312123  121221321321321221321312 | !!\*@&^(\*! |

## Edit Details2 Screen

This screen allows you to edit the details of an applicant. I chose this screen as it uses checkboxes to choose which details are being edited:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Number | Input | Normal | Extreme | Abnormal |
| 3 | Full Name | Byron | Pneumonoultramicro  scopicsilicovolcanoconiosis | 1991dofjoi12 |
| 4 | Middle Name | Trevor | Pseudopseudohypoparathyroidism | 23094809fdifoj33 |
| 5 | Surname | Kraus | Floccinaucinihilipilification | Kcojvdsiof0493899 |
| 6 | Cell Number | 0792415004 | 0000000000 | 092234f543 |
| 7 | Email | byronkraus@gmail.com | Byronbyronbyronbyronbyron1221121232423432@gmail.com | byron@@@gmail.com |

## PastApplicant’s Screen

This screen allows you to choose a booking category and shows the past applicants in that category. I chose this screen as it uses a table to select from:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Number | Input | Normal | Extreme | Abnormal |
| 8 | Booking Table | SmartID | N/A | None Selected |

## Table of Results

|  |  |  |  |
| --- | --- | --- | --- |
| Test Number | Normal | Extreme | Abnormal |
| 1 | Success | Success | Success |
| 2 | Success | Success | Success |
| 3 | Success | Success | Success |
| 4 | Success | Success | Success |
| 5 | Success | Success | Success |
| 6 | Success | Success | Will replace data with original data as it contains a letter |
| 7 | Success | Success | Success |
| 8 | Success | N/A | No issue, defensive programming forces applicant to select a choice in the table |

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