

BTEC Level 3 Foundation Diploma Computing

Unit 10: Human-Computer Interaction

Assignment: 2

Digital Signs Solution and Testing

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Introduction

In order to improve the shoppers at AMAP shopping centre's shopping experience, the company's director has requested me to create a digital signs solution in order to help the shoppers find their way around the shopping centre. The user interface created for this project has to be split into 3 parts, those being advertising, promotions and special events. These have to be located in the middle of the screen as well as show different categories of shops and other services of the shopping centre. Other requirements include the main menu content which has to be categorised into parking, banks, shopping, food, search, special offers, disabled access facilities, centre information as well as help to navigate the interface, facilities required which should allow the user to select a category and display all the services in that category as well as user interaction options such as zooming in and out, access facilities, points of interest, current location, search function and audio feedback.

Design of HCI Solution

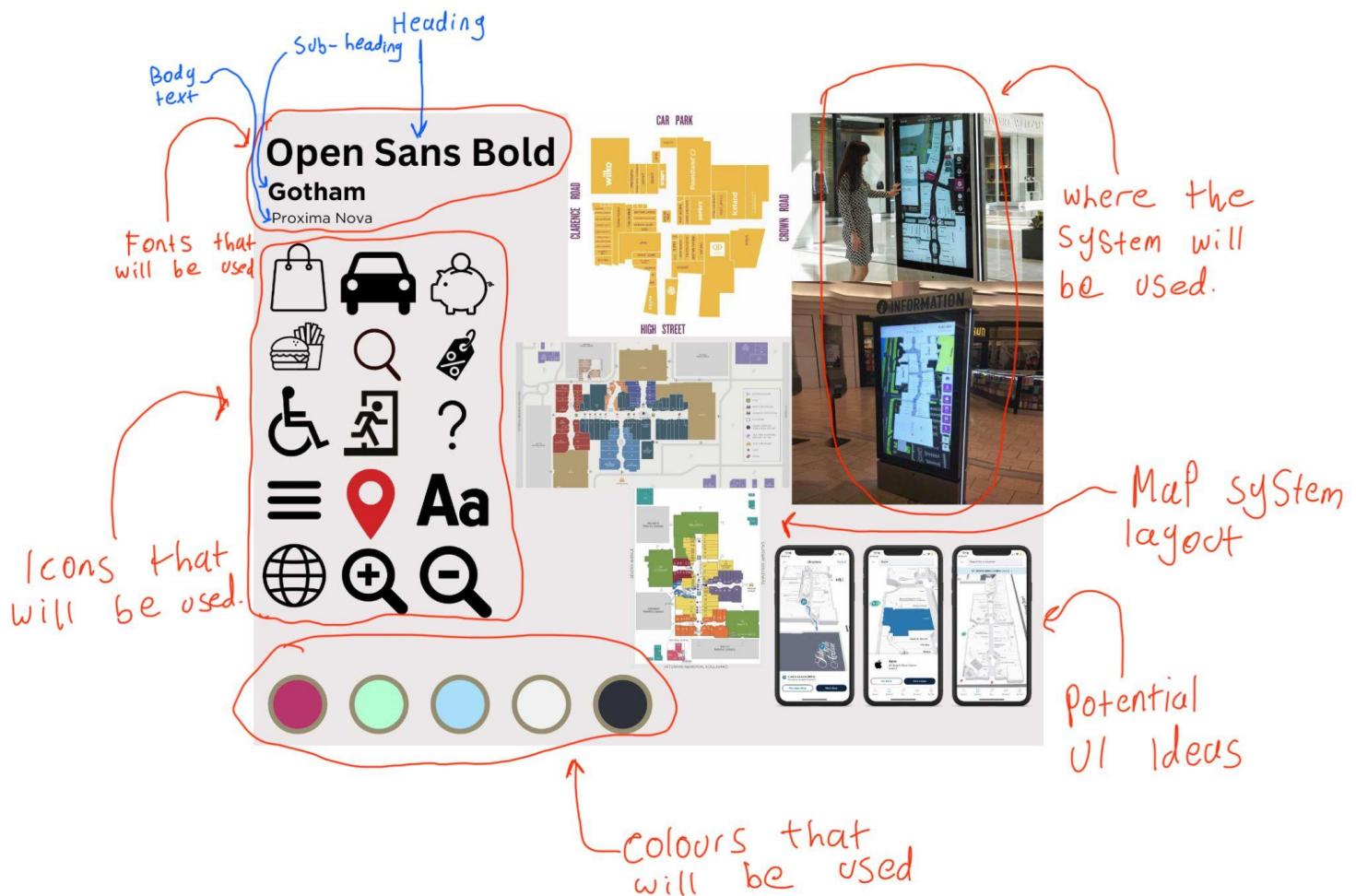
When it comes to the client requirements for the solution, the client requires the user interface of the digital signs solution to be split into 3 parts, those parts being one for advertising, one for promotions and one for special events. The reason why this needs to be split apart into 3 different forms is because these will all be different categories that the user will select and each will have its own menu functions. With the shops of the main menu, these are categorised into parking, banks, shopping, food, a search category as well as special offers in promotion, disabled access facilities, centre information which will include fire escapes as well as a help guide to help navigate the interface. The reason why these are the chosen categories is because these are needed to help shoppers use the menu system for its intended purpose as well as help the shoppers when it comes to accessibility. Categories such as shops, banks, parking, shopping and food are categories that are the most commonly visited places in the shopping centre, so including them in the system will make navigation easier for users. A search tab also helps navigation easier by allowing users to search for something specific and special offers will be listed on the promotion tab. When it comes to disabled access facilities, these will also be available as a category and centre information as well as help to navigate the interface can be used for accessibility.

As for the tasks that the system needs to perform, the system needs to be able to select a category and the screen should display all of the services and shops that are available from that category. This should be displayed because it helps customers to see everything all in one place and helps them choose which service or shop to go to nearest to where they currently are, making using the system for the customer easier and meeting their needs. The user should be able to scroll up and down on the system to see all the available options. This also makes it easier to see multiple options from the customer as there may be too many options so being able to scroll down and see further options makes using the system easier for the customer.

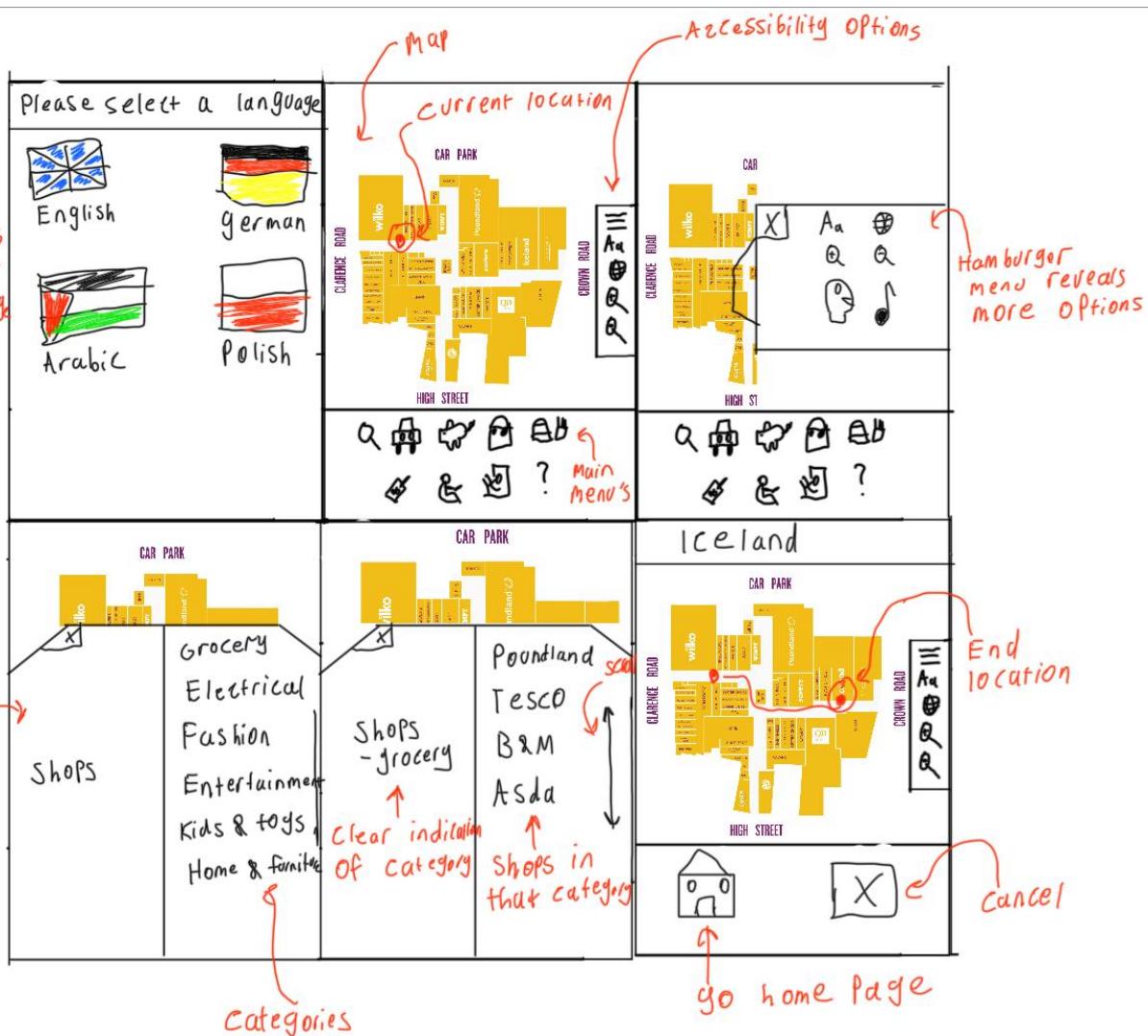
In terms of inputs that the system requires, one of the inputs that is required is the use of a keyboard. The reason why a keyboard is required is because the system also has a search button and the user needs to input what they would like to search for in the system using a keyboard. A mouse is also required in order to select different categories and navigate around the system as well as help in sections where the screen will scroll up and down. Another input that would also be required is a touchscreen. The reason why a touchscreen is required is because when the user uses the interface, it will be used with a touchscreen as it is a kiosk system. A touchscreen is also required as the interface will be designed around the use of one and physical devices such as a keyboard will instead be a touch based system for the user with an on screen keyboard.

As well as inputs, outputs are also required for the system. One of the things that the system needs to output is text. The reason why text needs to be outputted is because it clearly helps users to see the names of shops, how to use the system as well as understand information output much easier if there is text output. In addition to text that will be outputted, graphics also need to be outputted such as icons, the graphics for the map, logos etc. The reason why graphics need to be outputted is because it helps give users a visual cue of what each category or thing on the menu is and helps those that may speak other languages or may have problems when it comes to reading text based information. The map of the whole shopping centre is also another output that needs to be given. The whole map needs to be outputted because it helps the user show where they are in the shopping centre as well as show where certain shops are located in the shopping centre. This helps the user navigate around the shopping centre as they would have a general idea of what the shopping centre looks like. When a user selects a category, all of the services and shops also need to be outputted and displayed to the user. This allows the user to easily see an output of all the shops in the shopping centre. Audio is another feedback that has to be given to the user. This is because it is required for those who have visual problems and impairments so that they can still use the system with audio feedback given.

The system also requires different features for accessibility so that other users can also access and use the system. One of these requirements is to make sure that when the user uses the system, they have the ability to zoom in and out of the screen. This is required because it allows the user to see the screen easier by zooming in and out of the screen which can make it easier for the user to see some elements such as text. Language options is another feature that should be implemented into the system for accessibility. This is because there could be some users that are using the system and are from another country so they may not be able to recognise what options there are on the system due to not knowing much English, so other language options are always a good option to have for those users. Audio feedback should be another accessibility feature that would be required for the system. This is because there are some users that may have visual problems and would require audio feedback to use the system. In addition to this, being able to change the size of text is also another feature to implement as some users may not be able to read text that is too small or too big.



In terms of the hardware and software requirements that the kiosk will need, the kiosk will be running on a Windows 10 machine that has a minimum of 8GB of RAM, an Intel Core i5 processor and at least 500GB's of device storage available as an SSD. The reason why these requirements are required is because the solution will be coded in C# as a Windows form application, which can only be run on Windows devices. In addition to this, a sufficient amount of RAM, Storage and processing power is required because it makes sure that the kiosk can run smoothly and well as well as have enough capacity available to store the program on the machine as some of the storage will anyways be taken up by the operating system. An SSD is also required here as it is much faster than using a HDD. In terms of other hardware requirements, a touch screen is required for users to use the system on the kiosk, however I will be testing it out using a mouse to demonstrate the use of how touch input can be used. In terms of software requirements, Windows 10 is going to be the operating system used as well as visual studio is required to run the program since its a windows form application written in the C# language.



With design rules that need to be considered in HCI, one of the design rules is recognition.

Recognition is recognising events or information in HCI being familiar. The reason why this needs to be justified with the kiosk system is because Icon's need to be used so that users can recognise what each icon does and represents to use the menu system. With the menu system I am creating, certain actions and icons will be used so that users know what each of them does, such as cross icons to close tabs or icons to know what each category of shop is and what it does.

Usefulness of the solution also needs to be considered when using HCI design rules. The reason why usefulness needs to be considered is because the interface needs to be useful to the user by providing the needs of the user and giving them information that is necessary to them.

Consistency is also important because it helps create a design for users that is consistent and easy to use by having all actions available across each form at the same location. The interface also needs simplicity so that it's easy for users to use without feeling like the interface is cluttered and communication feedback has to be given to make sure that the user is aware of what is going on in the kiosk system.

Review of HCI Solution Design

After getting responses from 4 other people I have received a list of feedback, both positive and negative, for my HCI design solution. With this feedback given, I have decided to go back and improve my design documentation based on this feedback.

...

These are the tasks that need to be performed by the system. Please read and state any feedback that needs to be given, such as more tasks that the system should perform. If no feedback is required, then please state so.

As for the tasks that the system needs to perform, the system needs to be able to select a category and the screen should display all of the services and shops that are available from that category. This should be displayed because it helps customers to see everything all in one place and helps them choose which service or shop to go to nearest to where they currently are, making using the system for the customer easier and meeting their needs. The user should be able to scroll up and down on the system to see all the available options. This also makes it easier to see multiple options from the customer as there may be too many options so being able to scroll down and see further options makes using the system easier for the customer.

Long-answer text

4 responses

These are clear tasks for the system to perform, I don't see any issues with them.

No feedback needed.

These are good tasks to be performed by the system

Will there be any calculations performed within your program?

With the first question, most of the feedback given has been positive, saying there is nothing that needs to be changed or improved. However there was 1 response stating if there will be calculations that need to be performed in my program. In my program, there may be some calculations that need to be performed when it comes to potentially loading forms, however for mathematical calculations or currency that needs to be collected, it is very unlikely that those calculations are going to be performed by the system.

:::

These are the inputs that will be required. Please read and state any feedback that needs to be given, such as additional inputs. If no feedback is required, then please state so.

In terms of inputs that the system requires, one of the inputs that is required is the use of a keyboard. The reason why a keyboard is required is because the system also has a search button and the user needs to input what they would like to search for in the system using a keyboard. A mouse is also required in order to select different categories and navigate around the system as well as help in sections where the screen will scroll up and down. Another input that would also be required is a touchscreen. The reason why a touchscreen is required is because when the user uses the interface, it will be used with a touchscreen as it is a kiosk system. A touchscreen is also required as the interface will be designed around the use of one and physical devices such as a keyboard will instead be a touch based system for the user with an on screen keyboard.

Long-answer text

The input options are fitting for the requirements of this interface and I have no problem with that.

No feedback needed.

There are no other inputs needed but maybe specify the difference between the use of the system through a PC as needing a physical keyboard and mouse and the when the system is developed into an actual digital sign, the use of touchscreen. (Unless a physical mouse and keyboard will be on the digital sign as well)

As well as the input devices that will be used, name the data that users will input e.g an element being interacted with, search bar data and how it is used

As for the inputs that my program will have, the feedback given has been mixed, with the first two responses giving positive feedback however the third and fourth responses have questioned what I have written. With the response for the difference between the PC and the developed system. The PC system will use a physical mouse and keyboard to interact with whereas the system developed in a digital sign will use a touchscreen for input and not a physical mouse or keyboard. This is because the system will be used as a kiosk and will not have space for a physical mouse and keyboard, so the user will be interacting with a touchscreen and use a touchscreen keyboard.

With the second response, some of the data that users will input include data such as strings and integers as well as input the location of shops, search bar results as well as interacting with icons and a mouse/touchscreen. This is all data that users will input and interact with when using the digital sign solution.

:::

These are the outputs that will be required. Please read and state any feedback that needs to be given, such as additional outputs. If no feedback is required, then please state so.

As well as inputs, outputs are also required for the system. One of the things that the system needs to output is text. The reason why text needs to be outputted is because it clearly helps users to see the names of shops, how to use the system as well as understand information output much easier if there is text output. In addition to text that will be outputted, graphics also need to be outputted such as icons, the graphics for the map, logos etc. The reason why graphics need to be outputted is because it helps give users a visual cue of what each category or thing on the menu is and helps those that may speak other languages or may have problems when it comes to reading text based information. The map of the whole shopping centre is also another output that needs to be given. The whole map needs to be outputted because it helps the user show where they are in the shopping centre as well as show where certain shops are located in the shopping centre. This helps the user navigate around the shopping centre as they would have a general idea of what the shopping centre looks like. When a user selects a category, all of the services and shops also need to be outputted and displayed to the user. This allows the user to easily see an output of all the shops in the shopping centre. Audio is another feedback that has to be given to the user. This is because it is required for those who have visual problems and impairments so that they can still use the system with audio feedback given.

These outputs seem acceptable.

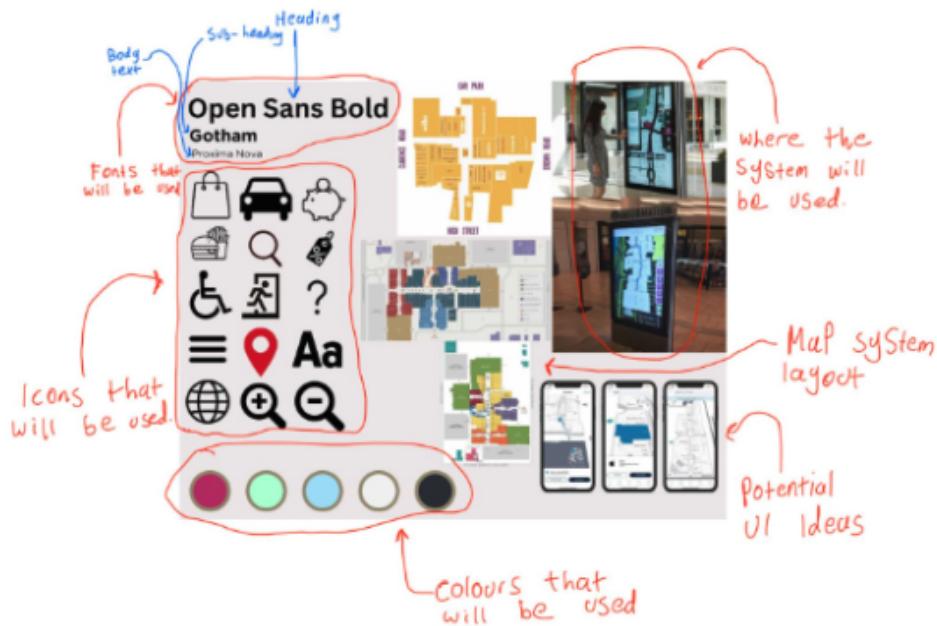
No feedback needed.

There are no other outputs that you haven't stated already

All good

With feedback regarding the outputs my solution will perform, all the feedback has stated that the outputs I have listed are good and that no further feedback has to be given.

This is the mood board I have designed. Please read and state any feedback that needs to be given, such as new fonts, more colours etc. If no feedback is required, then please state so.



Long-answer text

Not all the icons are obvious. Do the icons have text with them or are you relying on the user understanding what they mean? If you are the second option then I advise you add some explanation somewhere.

Looks good. Maybe use the same font, but it doesn't matter as much because they're similar.

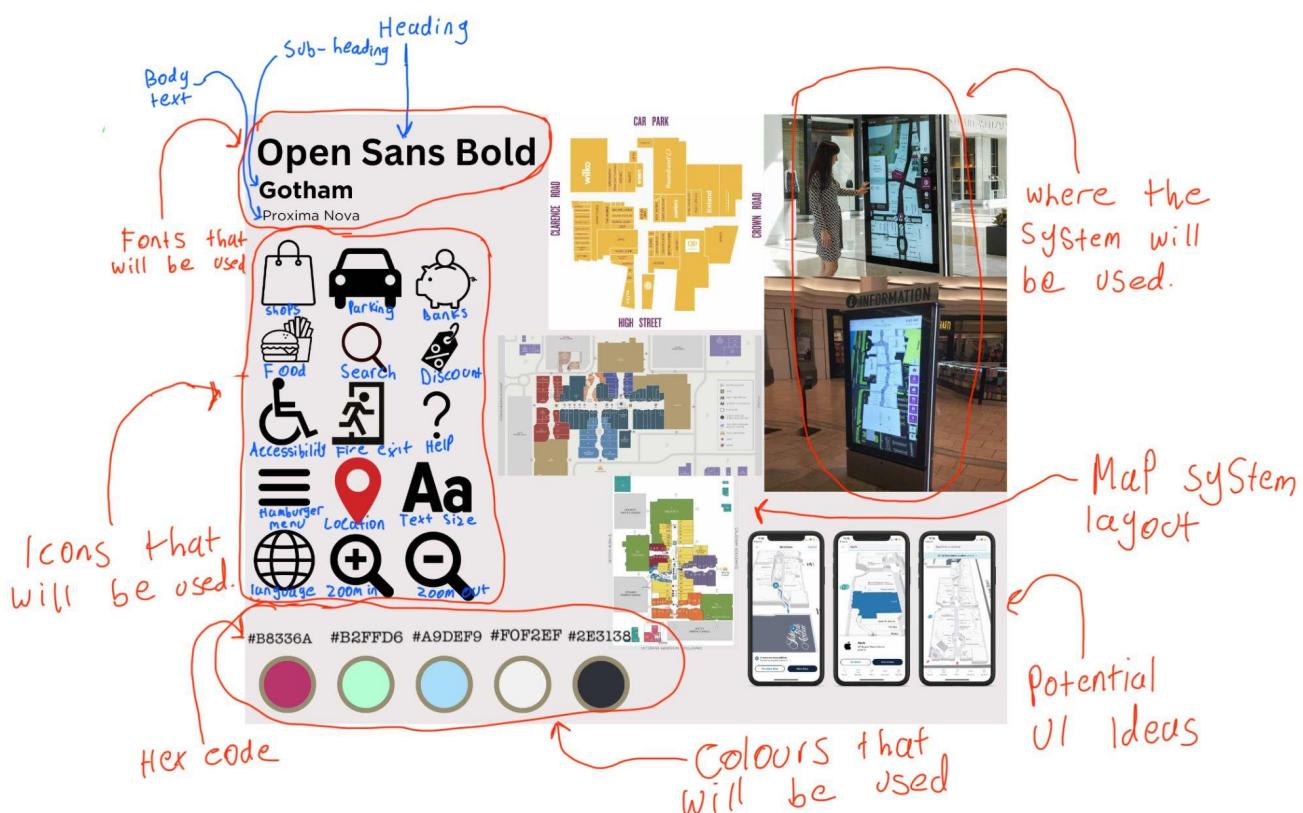
The colour theme is good as long as lighter coloured text is not put on top off another lighter colour background so it can't be read. The icons are very good and I personally know what they mean but maybe have labels somewhere and a key just in case others don't. the layout of the map is good as well especially if the zoom feature is implemented so that all the areas can be seen.

Perhaps using a text box and lines would make the annotations more readable rather than the draw tool, in addition the names and hex codes of the colors would be useful

As for the feedback I have received for the moodboard I have created, most of the feedback received goes towards the annotations I have provided. With the first response and third response, both pieces of feedback have suggested that I add labels so that users understand what each of the icons will be. I will not only add these to the updated mood board, but will also consider adding them into the solution so that it is easier for users with accessibility problems so

that they know what each icon means. With the second response, I will however be using different fonts so that the importance of text can be shown in the solution. Using different fonts can separate elements such as headings and body text in the solution which makes the solution look nicer and can make looking at elements easier. As for the last part, I will also update the mood board to list the names and hex codes of the colours I have used.

updated mood board.



These are the hardware and software requirements I have listed. Please read and state any feedback that needs to be given, such as better hardware or different requirements. If no feedback is required, then please state so.

In terms of the hardware and software requirements that the Kiosk will need, the kiosk will be running on a Windows 10 machine that has a minimum of 8GB of RAM, an Intel Core i5 processor and at least 500GB's of device storage available as an SSD. The reason why these requirements are required is because the solution will be coded in C# as a Windows form application, which can only be run on Windows devices. In addition to this, a sufficient amount of RAM, Storage and processing power is required because it makes sure that the kiosk can run smoothly and well as well as have enough capacity available to store the program on the machine as some of the storage will anyways be taken up by the operating system. An SSD is also required here as it is much faster than using a HDD. In terms of other hardware requirements, a touch screen is required for users to use the system on the kiosk, however I will be testing it out using a mouse to demonstrate the use of how touch input can be used. In terms of software requirements, Windows 10 is going to be the operating system used as well as visual studio is required to run the program since its a windows form application written in the C# language.

Long-answer text

The requirements are reasonable and sound like they can be followed.

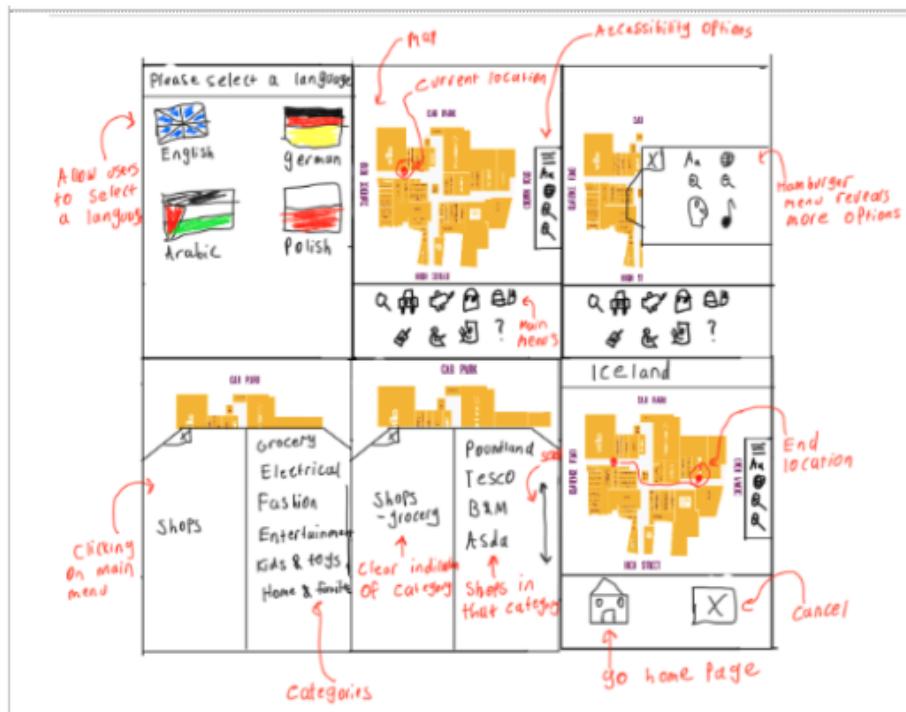
No feedback needed.

Great consideration of different hardware and software requirements and the factors that affect them

All good

Feedback has also been given to the hardware and software requirements I have listed which has all been positive. This means that nothing had to be changed since I have received no feedback where my work had to be changed, altered or something had to be added.

This is the storyboard I have created. Please read and state any feedback that needs to be given. If no feedback is required, then please state so.



Long-answer text

The area for the language selector is very large which feels unnecessary for such a simple input. Maybe include some other accessibility features in that segment too.

Maybe add a couple more languages more extra inclusivity.

Lots of options which is good for specified searching for certain shops and positioning of accessibility features makes them easy to be found. When creating the system be careful of any menus constructing the view of other features, ensure all components are spread out

Similar points to the mood board, the use of text boxes and line moves would be preferable for readability

With the storyboard I have created, all of the feedback I have received has asked me to improve some things when creating the final product. The first part of feedback has said that I should include accessibility features in the language selector, however I believe that this feedback includes accessibility features available in the language selector screen but the screen should still be in the final product. This is because it allows users to easily select a language they prefer to use when using the solution. The second bit of feedback has asked me to include more language

options which I will include in the final product, those languages being French and Spanish since it adds more European language options. With the 3rd bit of feedback, I will make sure to spread out elements so that they are not cluttered in the final product; however since this moodboard was small, it looked as if elements were clustered together.

These are the HCI design rules I have stated and listed. Please read and state any feedback that needs to be given, such as more design rules that need to be added. If no feedback is required, then please state so.

With design rules that need to be considered in HCI, one of the design rules is recognition. Recognition is recognising events or information in HCI being familiar. The reason why this needs to be justified with the kiosk system is because Icon's need to be used so that users can recognise what each icon does and represents to use the menu system. With the menu system I am creating, certain actions and icons will be used so that users know what each of them does, such as cross icons to close tabs or icons to know what each category of shop is and what it does. Usefulness of the solution also needs to be considered when using HCI design rules. The reason why usefulness needs to be considered is because the interface needs to be useful to the user by providing the needs of the user and giving them information that is necessary to them. Consistency is also important because it helps create a design for users that is consistent and easy to use by having all actions available across each form at the same location. The interface also needs simplicity so that it's easy for users to use without feeling like the interface is cluttered and communication feedback has to be given to make sure that the user is aware of what is going on in the kiosk system.

Long-answer text

I have no problems with this.

No feedback needed.

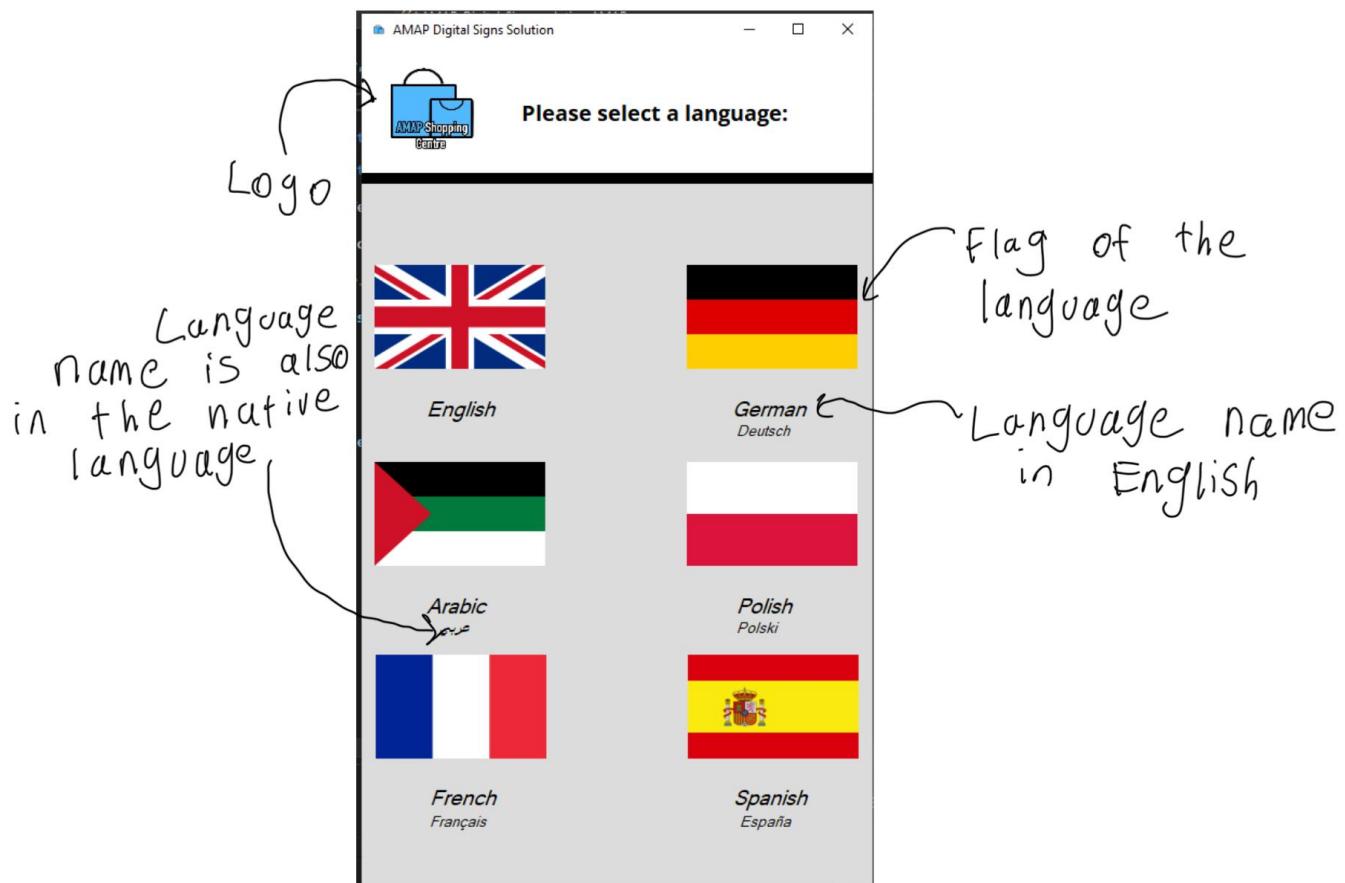
Will there be any dialogue/messages to let the user know something is happening when they press a button for the HCI design rule of Informative feedback? good mention of consistency and the use of recall and recognition. Might be worth mentioning error handling methods as well maybe but overall all the designs are good and have a lot of details to help with the creating/coding stage

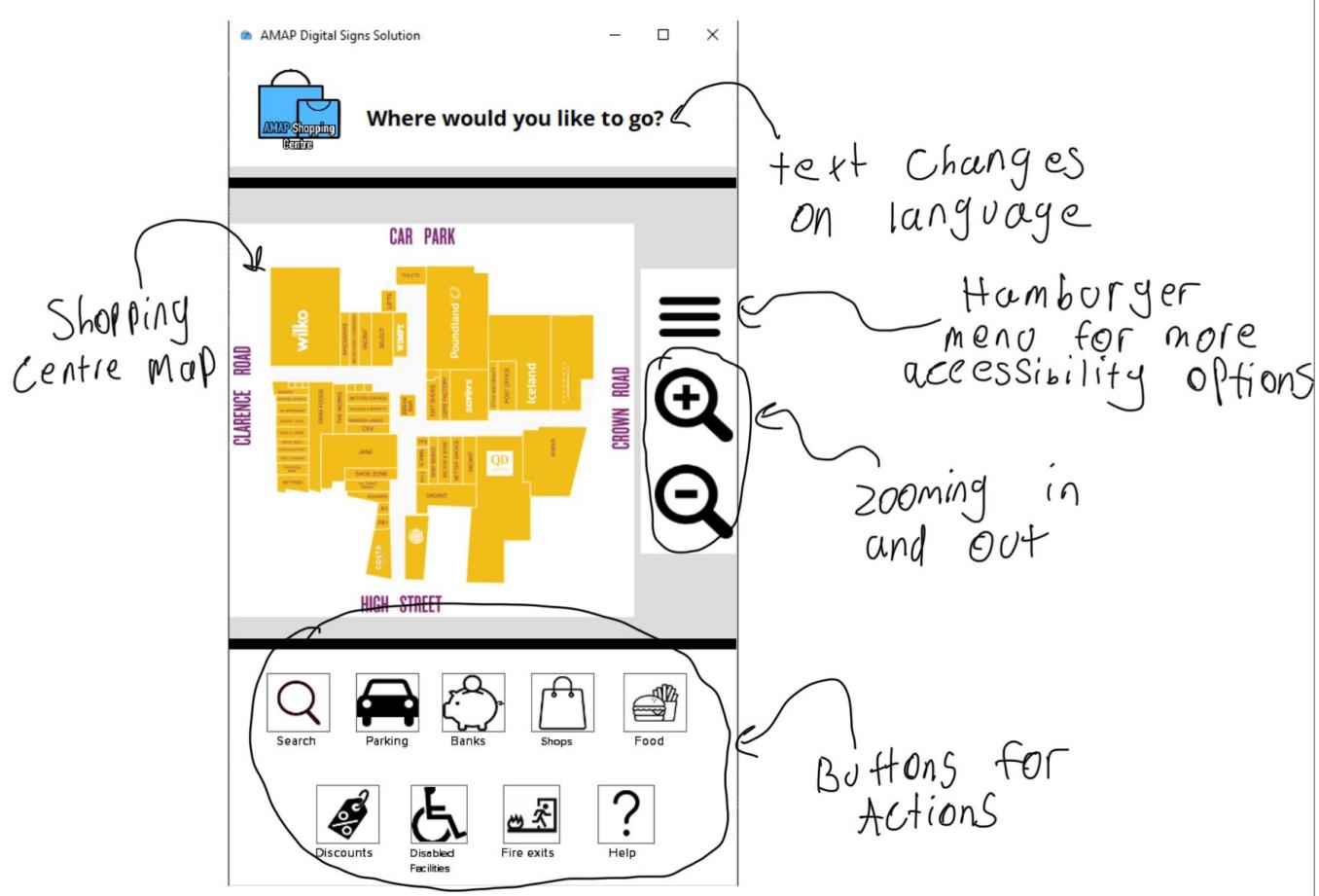
All good

The final question that I have asked people to gather feedback for was with the HCI design rules. All of the feedback has been good however 1 person has asked if dialogue feedback will be given when a user presses a button, which I will implement in the final solution. They have also asked me to mention error handling methods as well which I will also consider adding in the final solution.

HCI Solution

Annotated Screenshots of Program



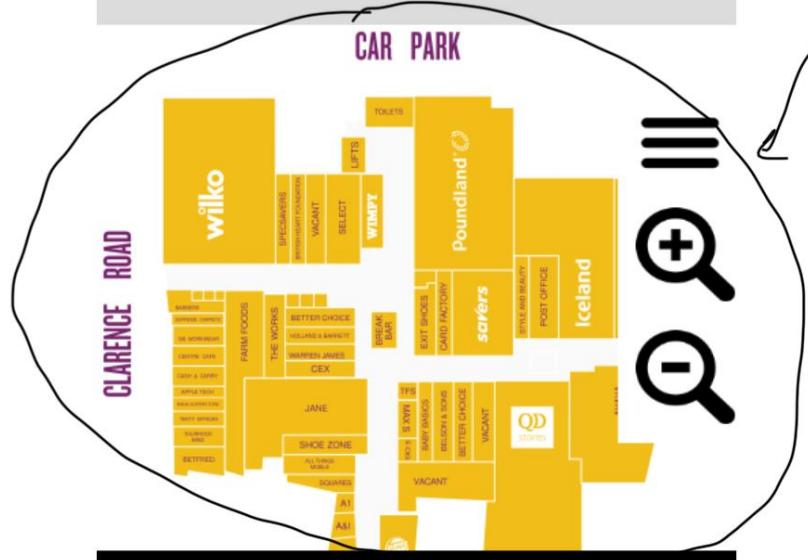


AMAP Digital Signs Solution

— □ ×



Where would you like to go?

Zooming in
to the Map

Search

Parking

Banks

Shops



Discounts



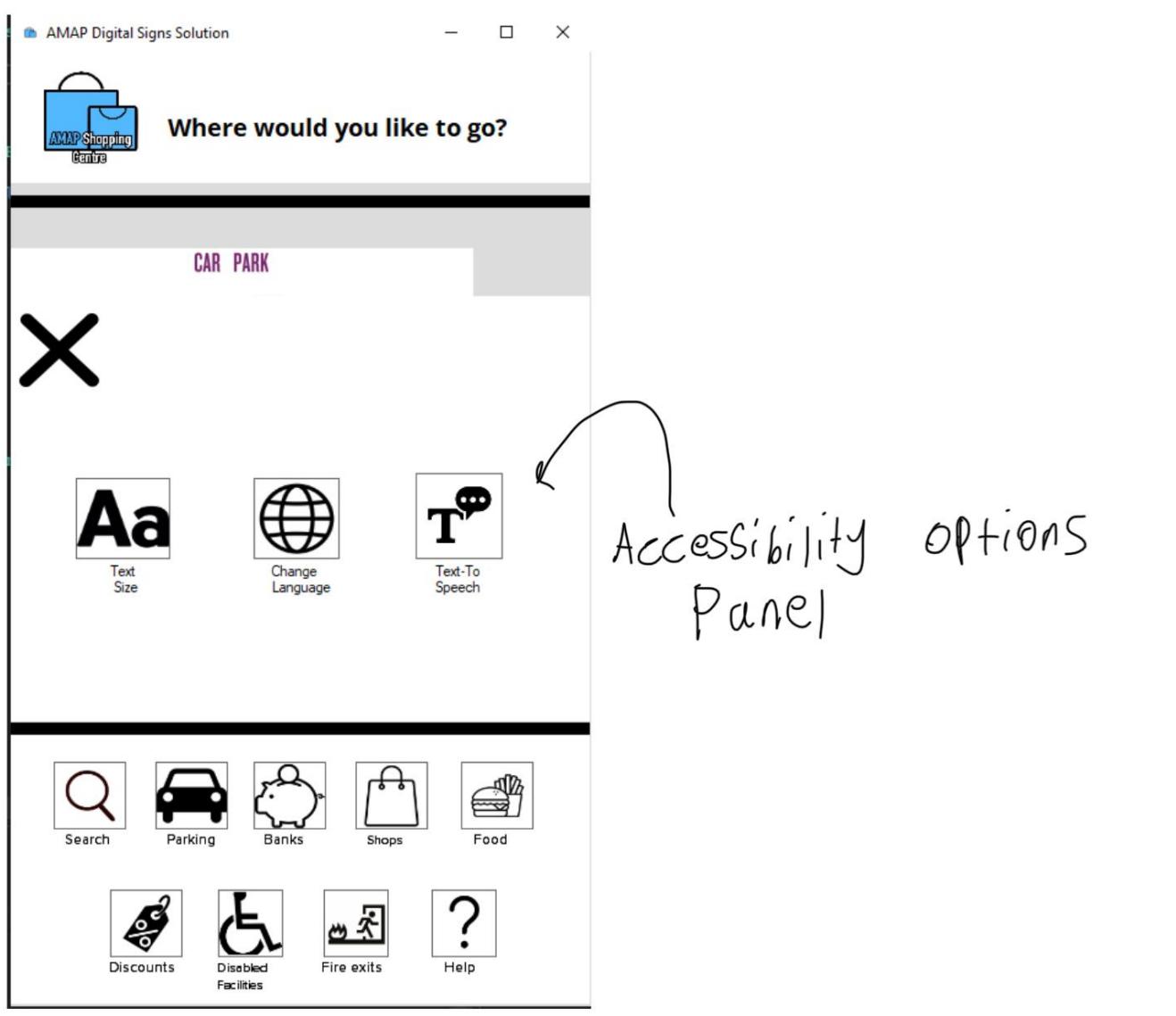
Disabled Facilities

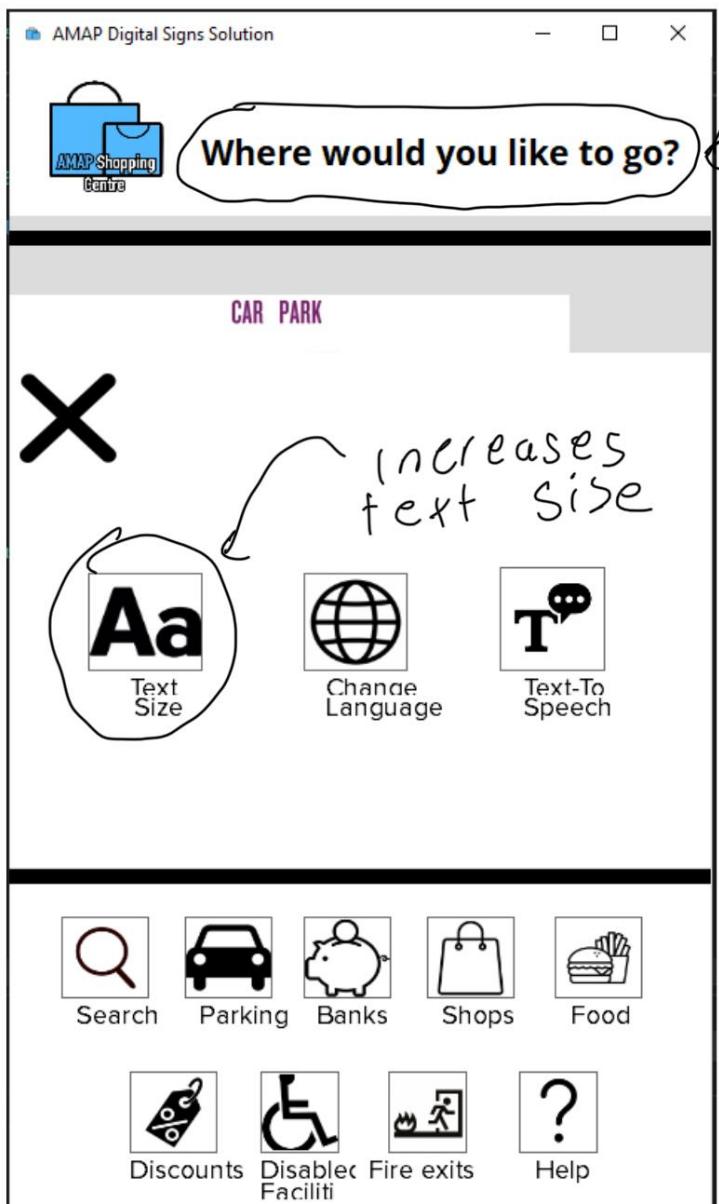


Fire exits



Help





AMAP Digital Signs Solution

Wo würdest du gerne hingehen?

CAR PARK

CLARENCE ROAD

HIGH STREET

CROWN ROAD

Different Language



Suchen



Parken



Banken



Geschäfte



Essen



Rabatt



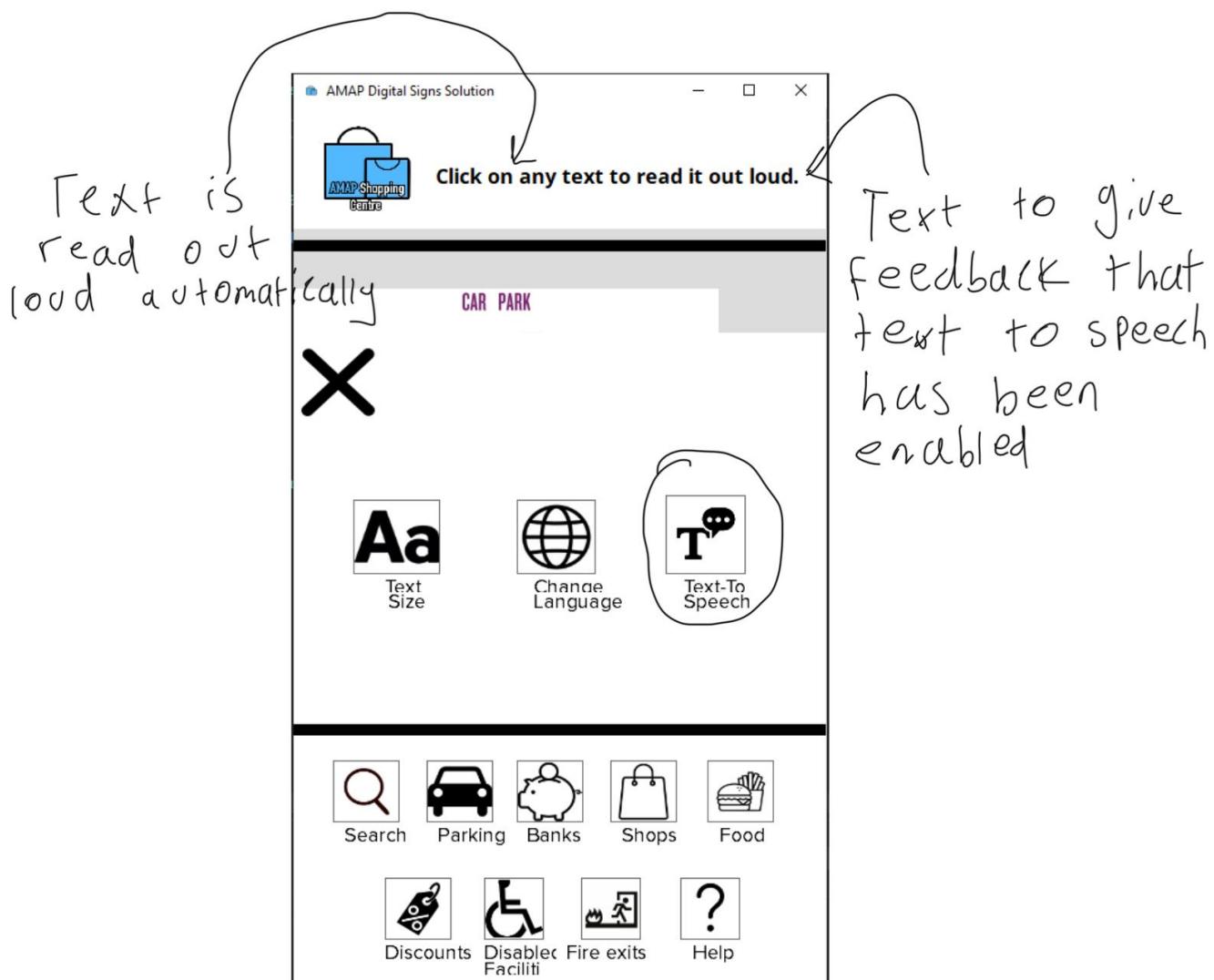
Behinderte Einrichtung

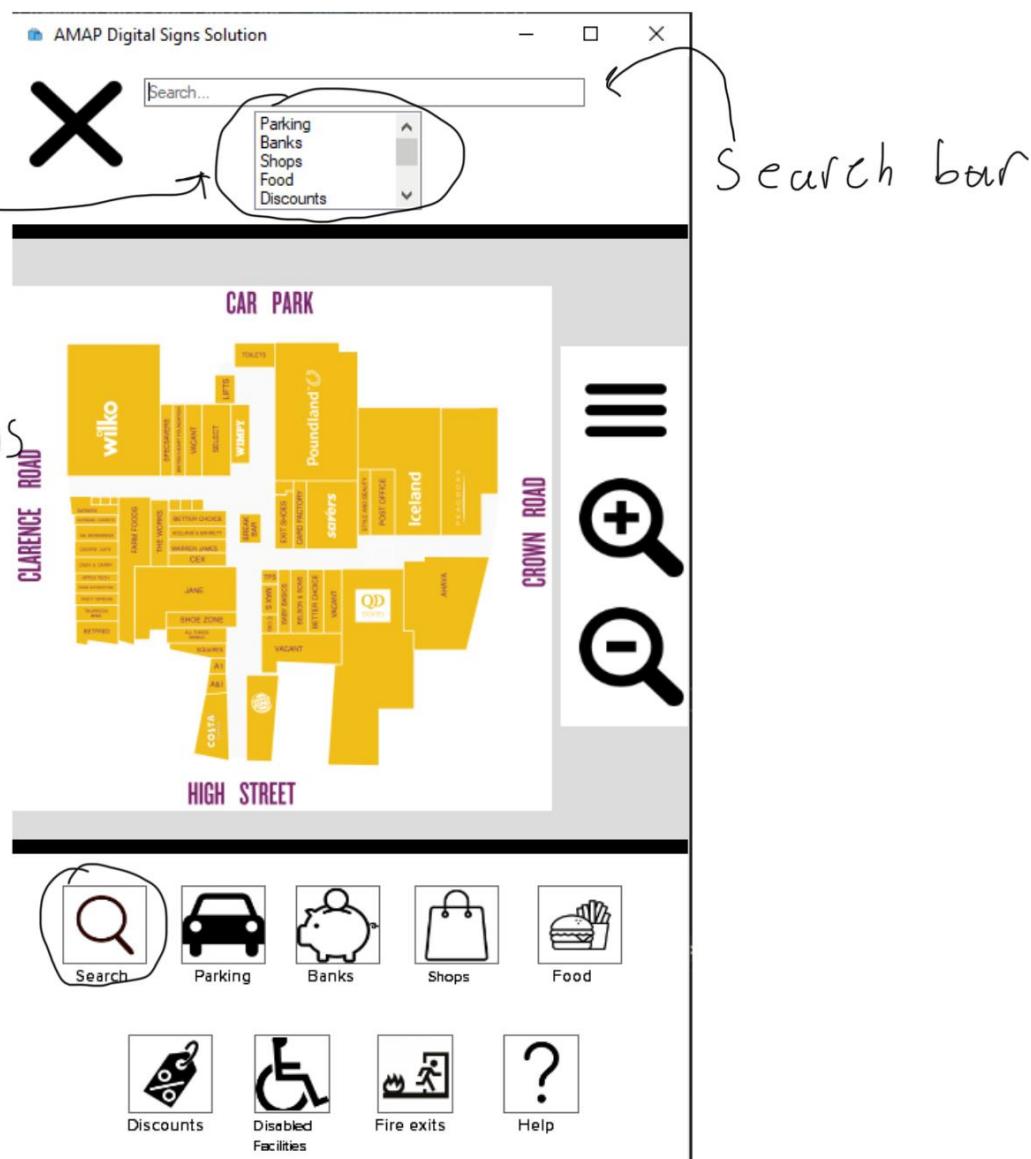


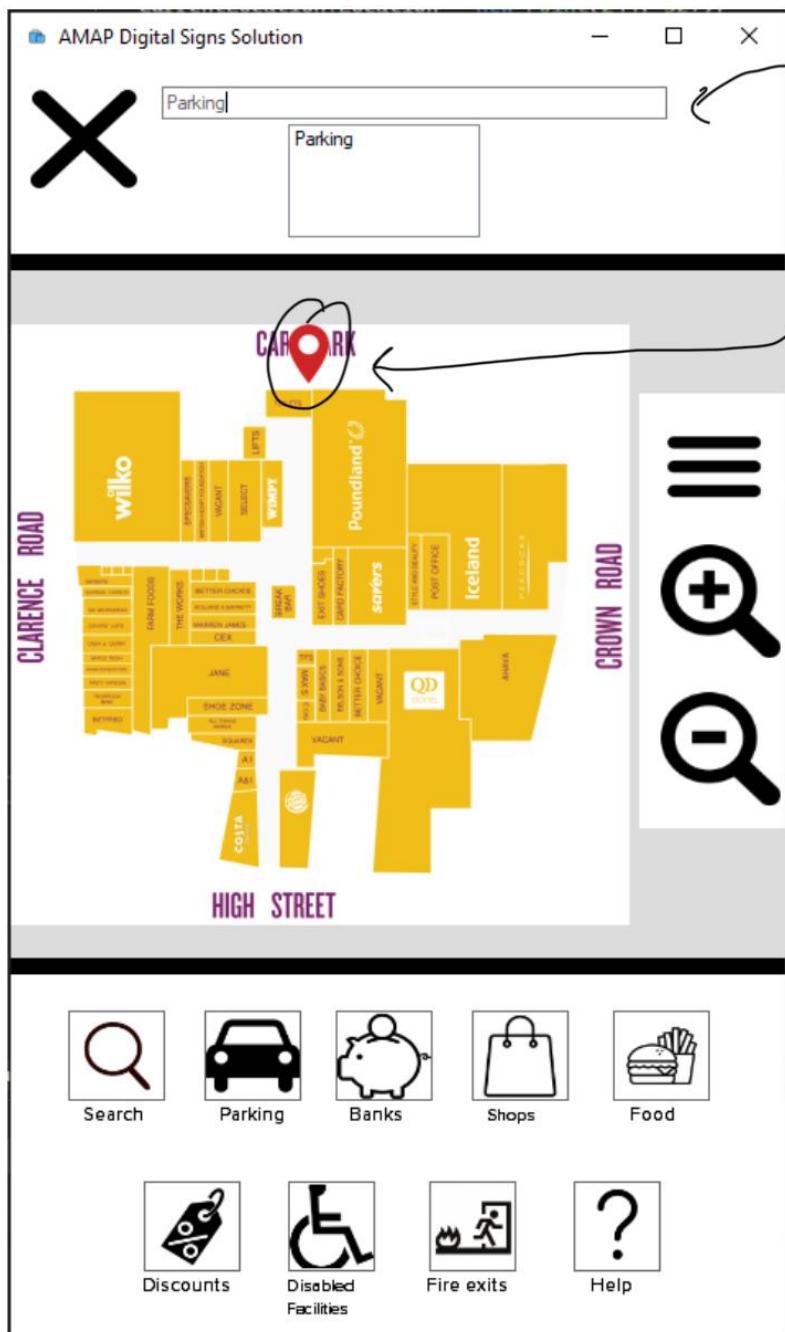
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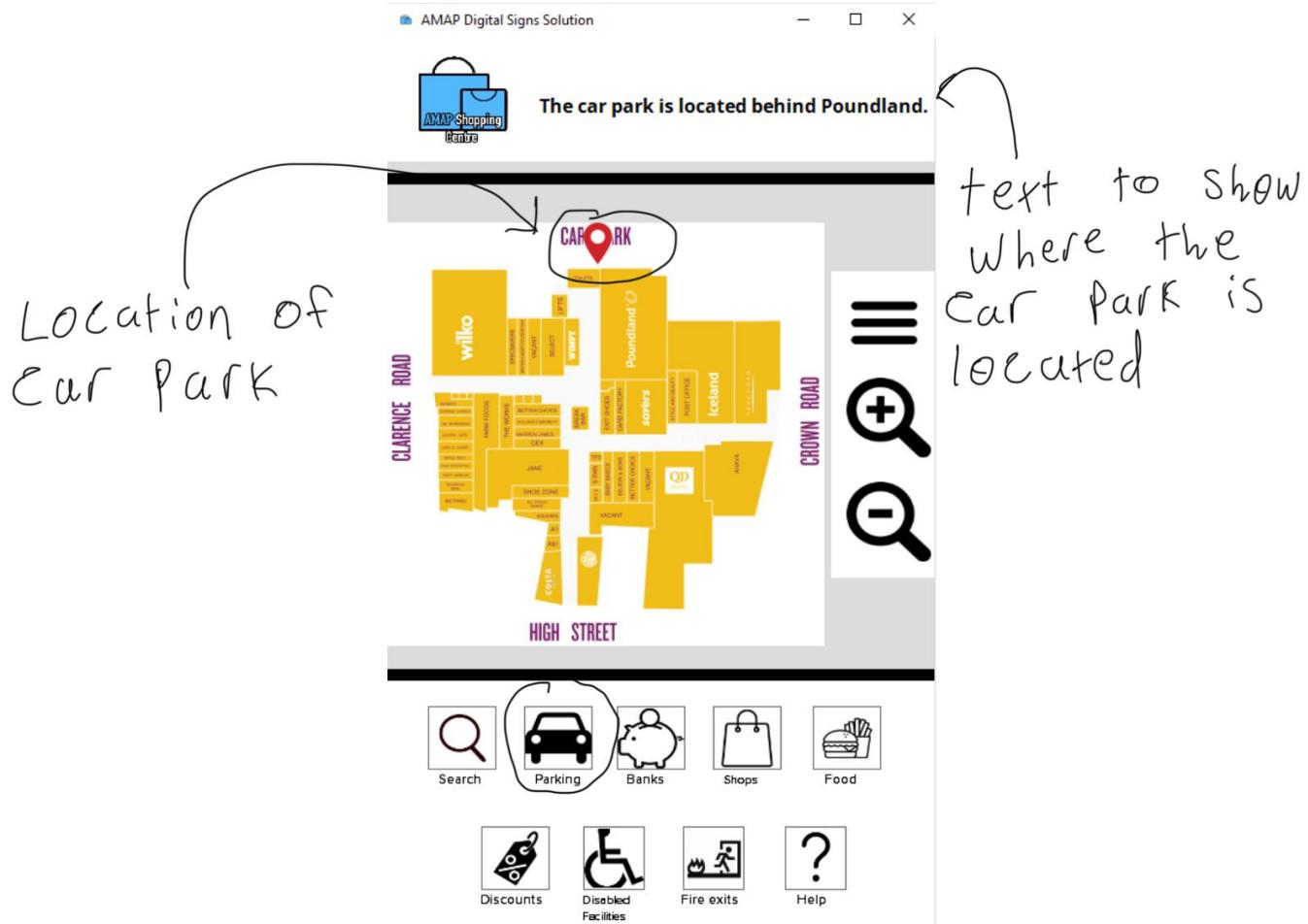
Hilfe

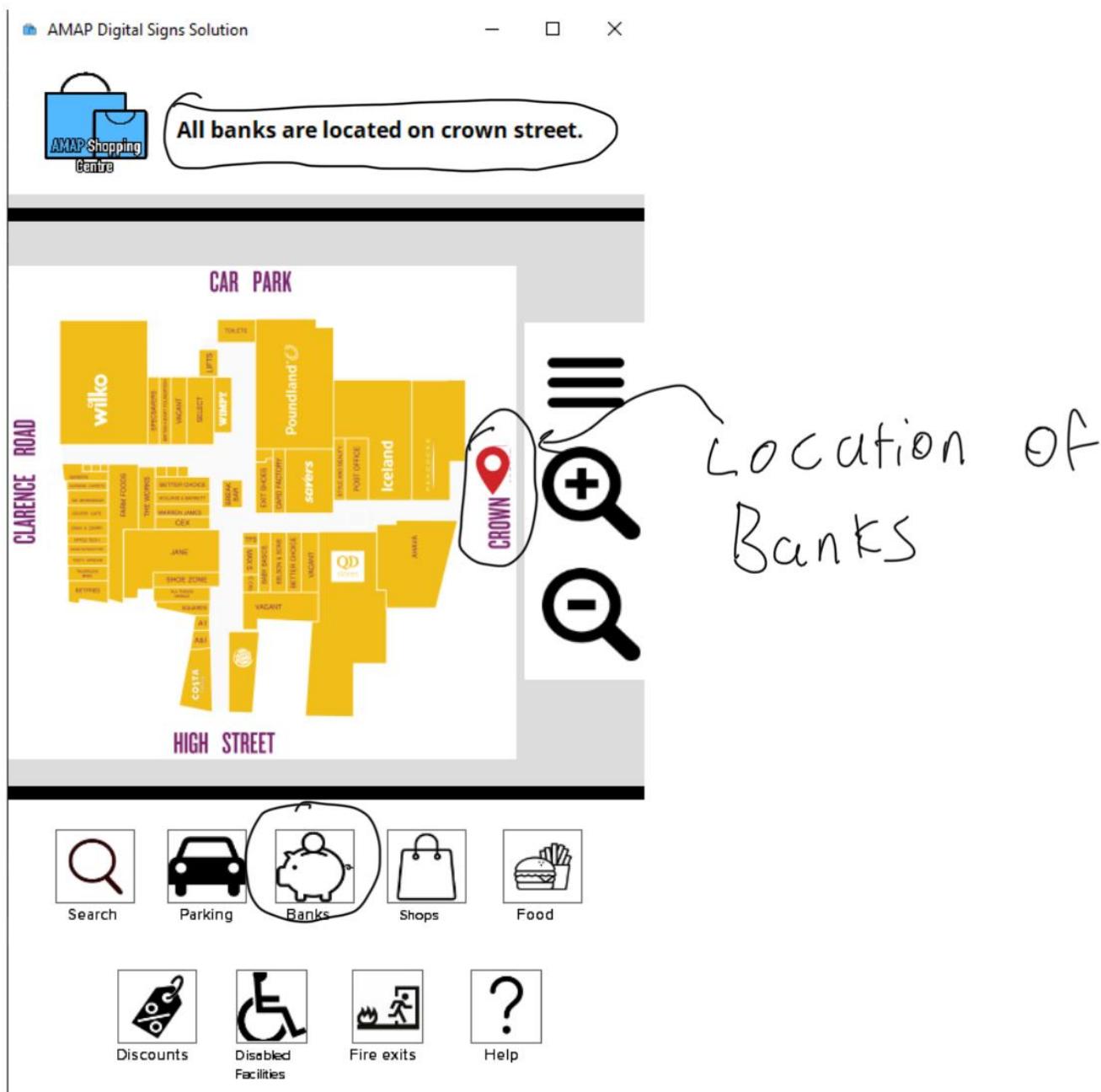






When the user searches the same as the suggestion, the location is shown





All banks are located on crown street.

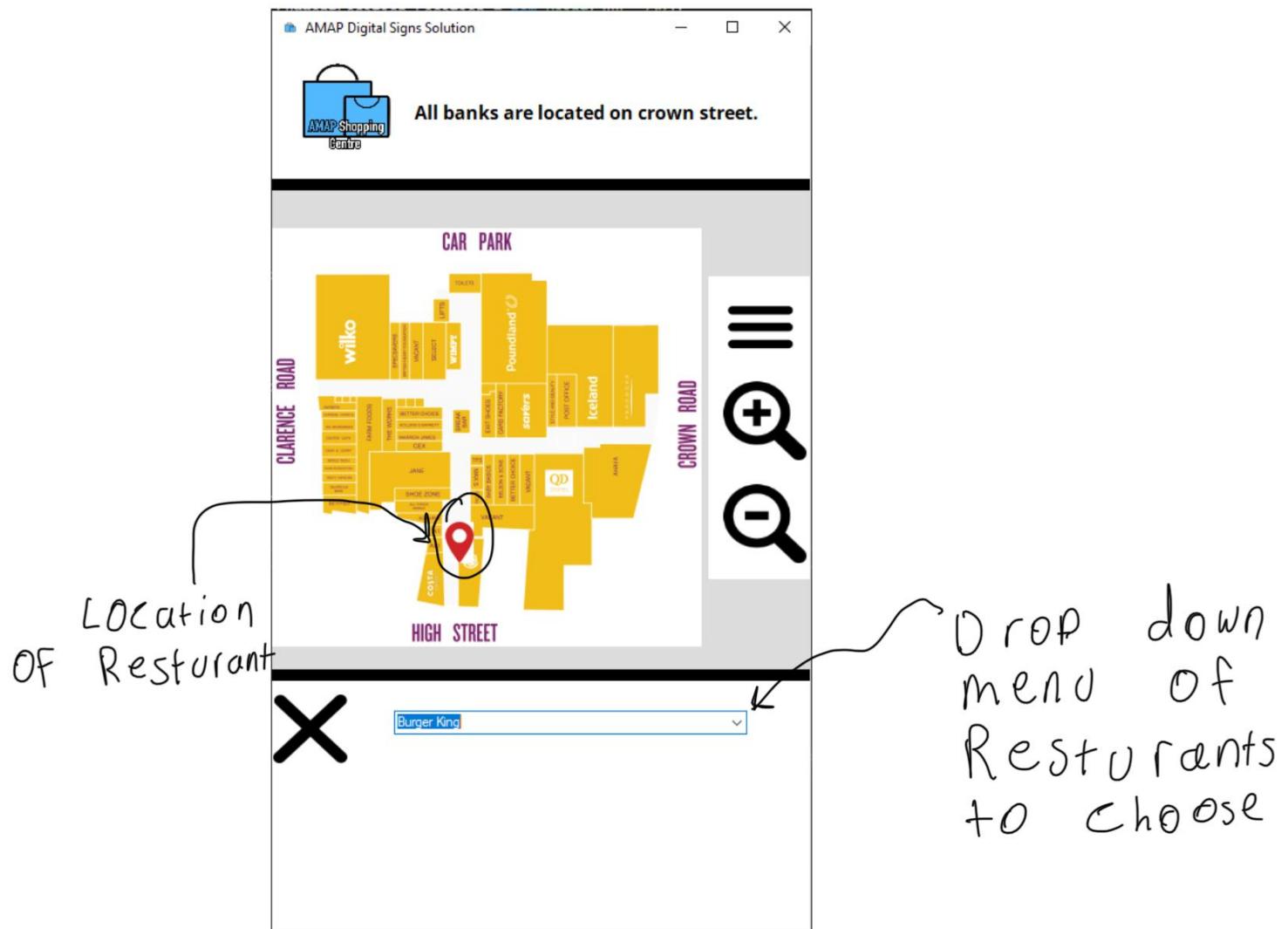
The diagram illustrates a user interface for a shopping center. At the top, there is a logo for "AMAP Shopping centre" featuring a blue shopping bag icon. Below the logo, a text box states: "All banks are located on crown street." To the right of the text box is a map of the shopping center. The map shows various shop locations with yellow icons. A specific shop, "Poundland", is highlighted with a red circle and a location pin. A callout line from the text "Location of that Shop" points to this pin. To the right of the map are three icons: a menu icon (three horizontal lines), a plus sign icon, and a magnifying glass icon. Below the map is a horizontal bar with a black 'X' icon and a dropdown menu button containing the text "Groceries". Another callout line from the text "Shops to choose in drop down menu" points to this dropdown menu. The bottom part of the interface features a large black vertical bar.

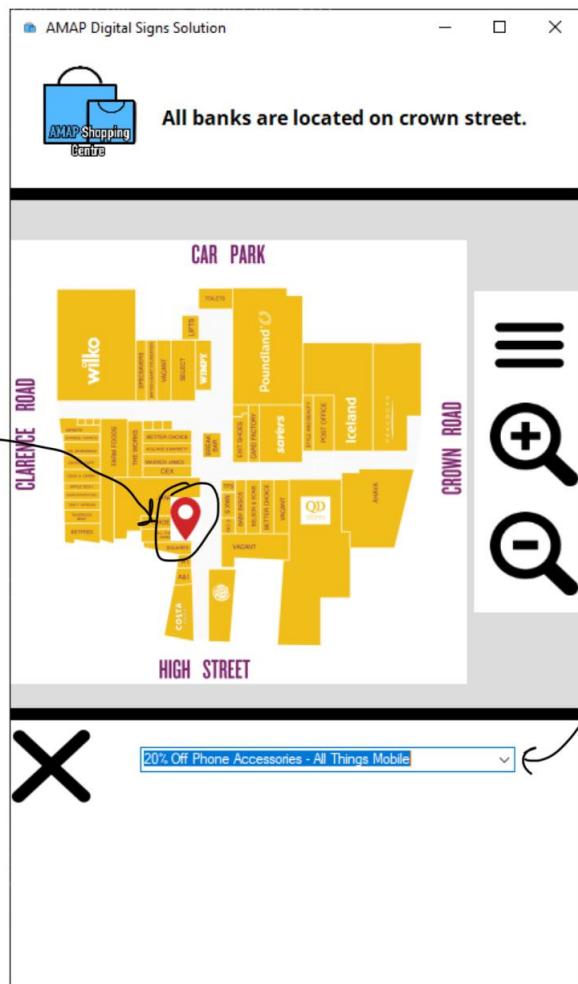
category OF shops

- groceries
- Electronics
- Fashion

Location of that Shop

Shops to choose in drop down menu

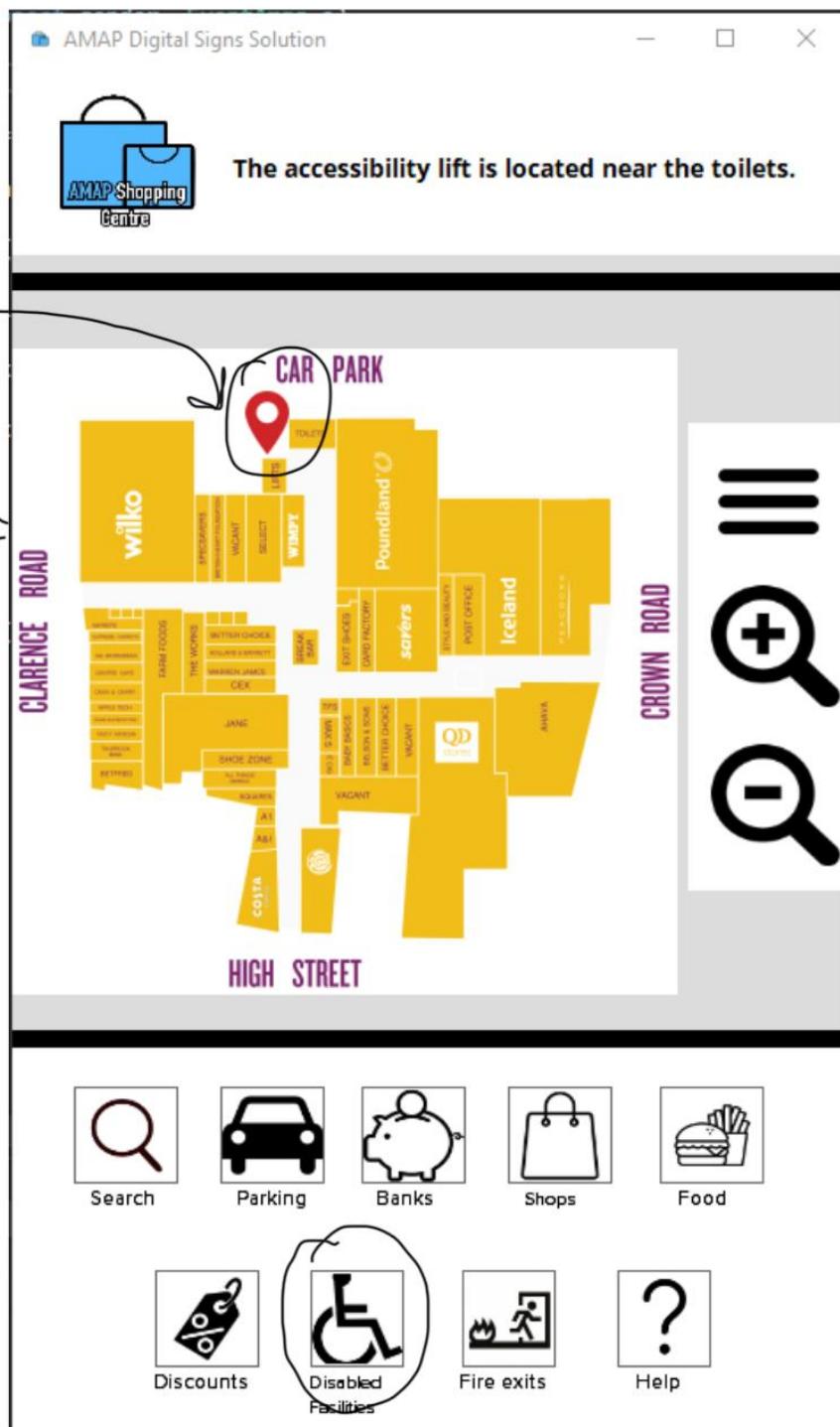


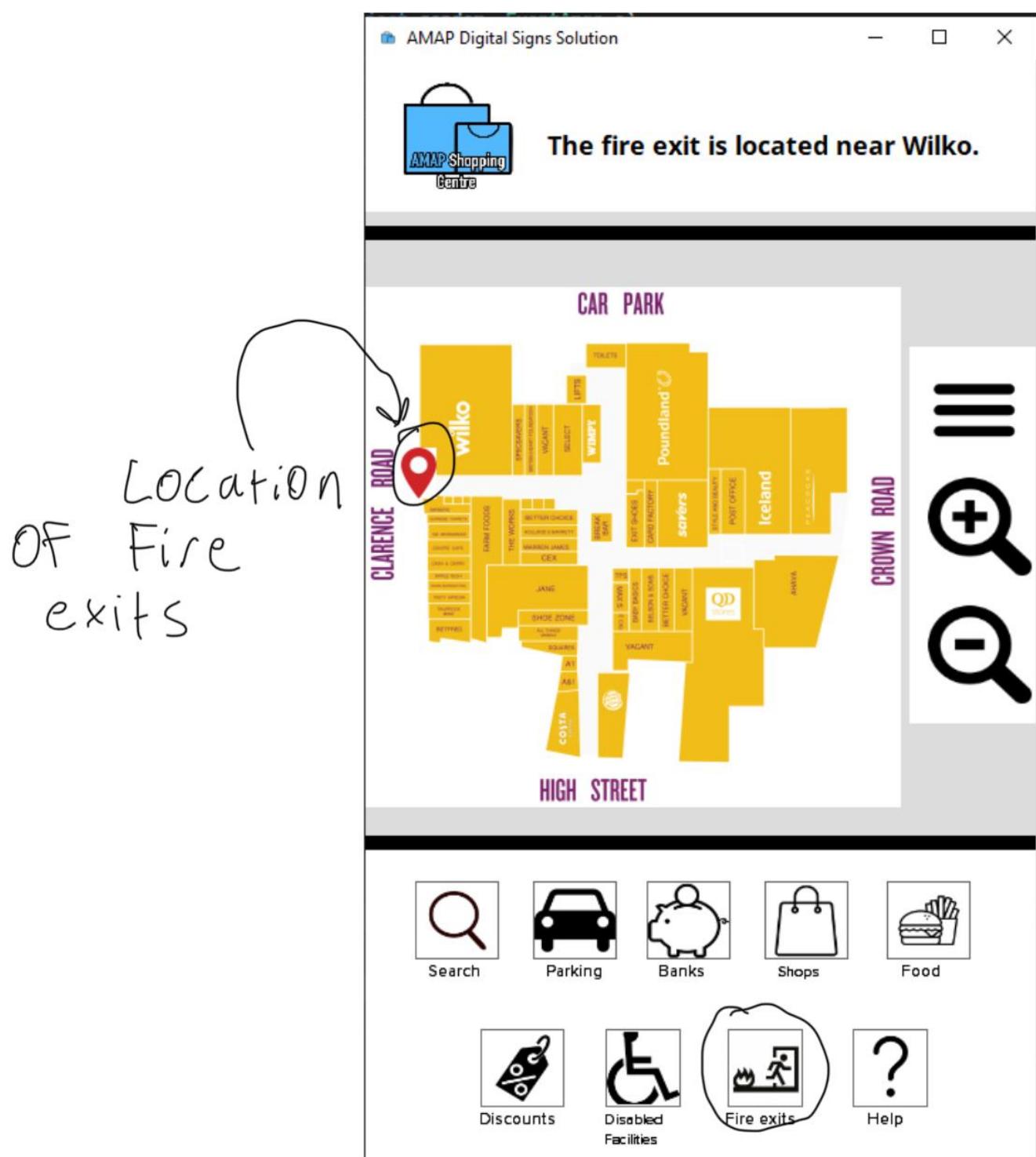


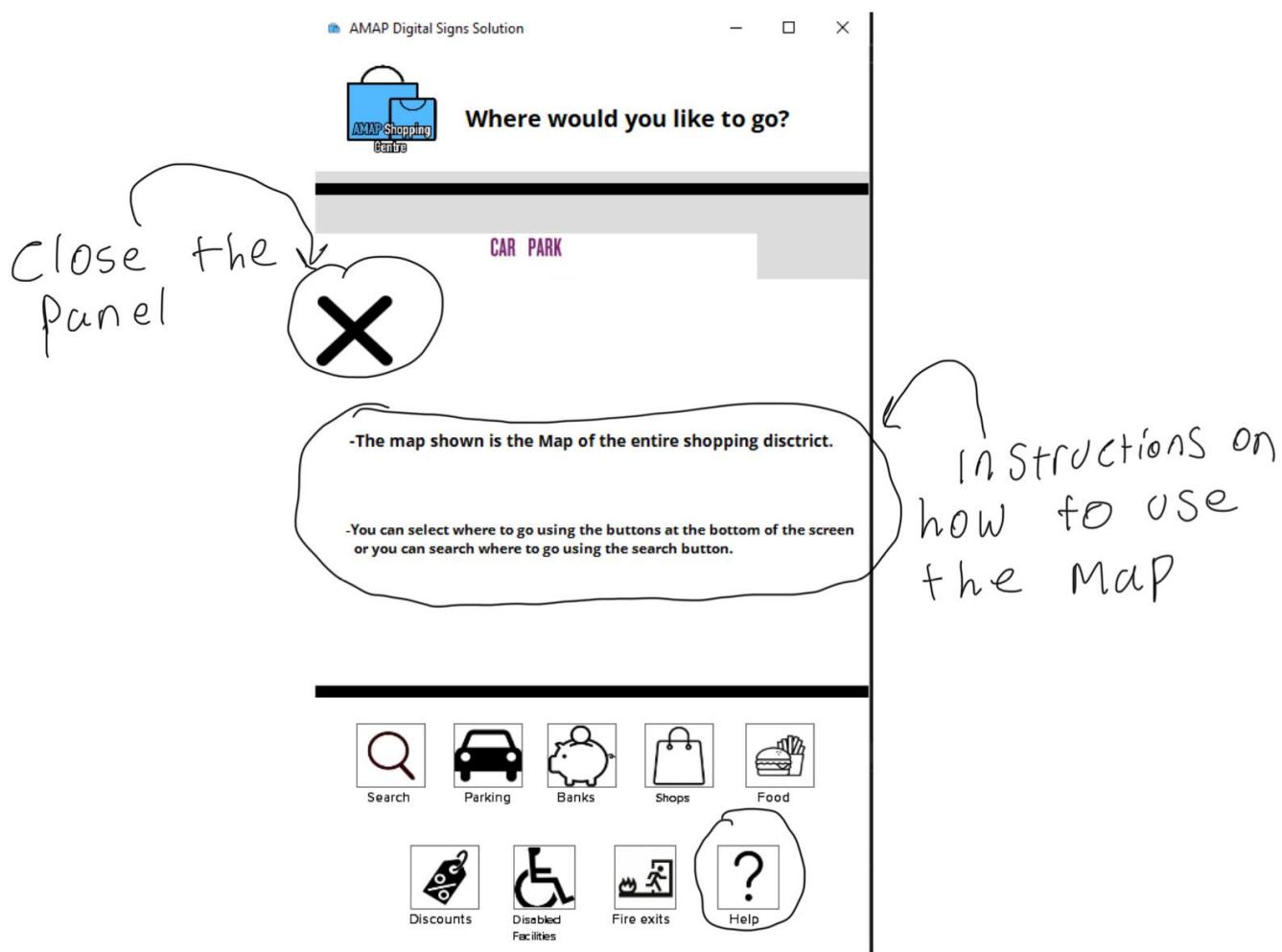
Location
of store
with the
discount

Drop down of
current discounts
available

Location of Disabled facilities





**Listing of Code:**

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;
using System.Drawing.Text;
using System.Speech.Synthesis;

namespace AMAP_Digital_Signs_solution
{
    public partial class AMAP : Form
    {
        SpeechSynthesizer voice = null;
    }
}

```

```
public AMAP()
{
    InitializeComponent();
    listcollection.Clear();
    foreach (string str in Searchlistbox.Items)
    {
        listcollection.Add(str);
    }
}

private void Languages_Load(object sender, EventArgs e)
{
    LanguagePanel.Visible = true;
    MainPanel.Visible = false;
    voice = new SpeechSynthesizer();
    //Creating custom fonts
    PrivateFontCollection OpenSans = new PrivateFontCollection();
    PrivateFontCollection ProximaNova = new
PrivateFontCollection();

    //Open sans
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\Fonts\static\OpenSans-Bold.ttf");
    lblSelect.Font = new Font(OpenSans.Families[0], 15,
FontStyle.Bold);
    lblMainText.Font = new Font(OpenSans.Families[0], 15,
FontStyle.Bold);

    //Proxima nova
    ProximaNova.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\Fonts\Proxima Nova Font.otf");
    Searchlbl.Font = new Font(ProximaNova.Families[0], 9);
    Parkinglbl.Font = new Font(ProximaNova.Families[0], 9);
    Banklbl.Font = new Font(ProximaNova.Families[0], 9);
    Shopslbl.Font = new Font(ProximaNova.Families[0], 8);
    Foodlbl.Font = new Font(ProximaNova.Families[0], 9);
    Discountlbl.Font = new Font(ProximaNova.Families[0], 9);
    Disabledlbl.Font = new Font(ProximaNova.Families[0], 8);
    Disabledlbl2.Font = new Font(ProximaNova.Families[0], 7);
    FireExitlbl.Font = new Font(ProximaNova.Families[0], 9);
    Helplbl.Font = new Font(ProximaNova.Families[0], 9);
}

//changing the text of each language
private void ChangeLanguage(int language)
{
    if (language == 1) //English
```

```
{  
    //Language select  
    lblSelect.Text = "Please select a language:";  
    //Main Map  
    lblMainText.Text = "Where would you like to go?";  
    //Main Map lables  
    Searchlbl.Text = "Search";  
    Parkinglbl.Text = "Parking";  
    Banklbl.Text = "Banks";  
    Shopslbl.Text = "Shops";  
    Foodlbl.Text = "Food";  
    Discountlbl.Text = "Discounts";  
    Disabledlbl.Text = "Disabled";  
    Disabledlbl2.Text = "Facilities";  
    FireExitlbl.Text = "Fire exits";  
    Helplbl.Text = "Help";  
    //Accessibility lables  
    Textlbl.Text = "Text";  
    sizelbl.Text = "Size";  
    Changelbl.Text = "Change";  
    Languagelbl.Text = "Language";  
    TextTolbl.Text = "Text-To";  
    Speachlbl.Text = "Speech";  
    //Button Lables  
    PrivateFontCollection OpenSans = new  
PrivateFontCollection();  
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment  
2\Fonts\static\OpenSans-Bold.ttf");  
    lblParking.Font = new Font(OpenSans.Families[0], 12);  
    lblParking.Text = "The car park is located behind  
Poundland.";  
    lblBanks.Font = new Font(OpenSans.Families[0], 12);  
    lblBanks.Text = "All banks are located on crown street.";  
    Accessibilitylbl.Font = new Font(OpenSans.Families[0], 10);  
    Accessibilitylbl.Text = "The accessibility lift is located  
near the toilets.";  
    lblFireExit.Font = new Font(OpenSans.Families[0], 13);  
    lblFireExit.Text = "The fire exit is located near Wilko.";  
    lblTextOutput.Font = new Font(OpenSans.Families[0], 13);  
    lblTextOutput.Text = "Click on any text to read it out  
loud.";  
    lblInstructions.Font = new Font(OpenSans.Families[0], 10);  
    lblInstructions.Text = "-The map shown is the Map of the  
entire shopping district.";  
    lblInstructions2.Font = new Font(OpenSans.Families[0], 9);  
    lblInstructions2.Text = "-You can select where to go using  
the buttons at the bottom of the screen";
```

```

lblInstructions3.Font = new Font(OpenSans.Families[0], 9);
lblInstructions3.Text = "or you can search where to go
using the search button.";
//Shop lables
CategoryComboBox.Items.Add("Fashion");
CategoryComboBox.Items.Add("Groceries");
CategoryComboBox.Items.Add("Electronics");

}
else if (language == 2) //Arabic
{
    //Language Select
    lblSelect.Text = "يرجى تحديد لغة";
    //Main Map
    lblMainText.Text = "أين تزيد أن تذهب؟";
    //Main Map lables
    Searchlbl.Text = "يبحث";
    Parkinglbl.Text = "موقع سيارات";
    Parkinglbl.Location = new Point(119, 636);
    Banklbl.Text = "بنك";
    Shopslbl.Text = " محلات";
    Foodlbl.Text = "طعام";
    Discountlbl.Text = "الخصومات";
    Disabledlbl.Text = "عاجز";
    Disabledlbl2.Text = "مرافق";
    FireExitlbl.Text = "مخرج الحرائق";
    Helplbl.Text = "يساعد";
    //Accessiblility lables
    Textlbl.Text = "نص";
    sizelbl.Text = "مقاس";
    Changelbl.Text = "يتغير";
    Languagelbl.Text = "لغة";
    TextTolbl.Text = "نص إلى";
    Speachlbl.Text = "خطاب";
    //Button Lables
    PrivateFontCollection OpenSans = new
PrivateFontCollection();
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\FONTs\static\OpenSans-Bold.ttf");
    lblParking.Font = new Font(OpenSans.Families[0], 12);
    lblParking.Text = "Poundland";
    lblBanks.Font = new Font(OpenSans.Families[0], 12);
    lblBanks.Text = "Crown Street";
    Accessibilitylbl.Font = new Font(OpenSans.Families[0], 12);
    Accessibilitylbl.Text = ".يقع مصعد الوصول بالقرب من دورات المياه";
    lblFireExit.Font = new Font(OpenSans.Families[0], 13);
    lblFireExit.Text = "Wilko";
    lblFireExit.Text = "يقع مخرج الحريق بالقرب من"
;

```

```

lblTextOutput.Font = new Font(OpenSans.Families[0], 13);
lblTextOutput.Text = "انقر فوق أي نص لقراءته بصوت عالٍ";
lblInstructions.Font = new Font(OpenSans.Families[0], 12);
lblInstructions.Text = "الخريطة الموضحة هي خريطة منطقة التسوق -";
". بأكملها";
lblInstructions2.Font = new Font(OpenSans.Families[0], 12);
lblInstructions2.Text = "يمكنك تحديد المكان الذي تريد الذهاب إليه -";
"; باستخدام الأزرار الموجودة أسفل الشاشة";
lblInstructions3.Font = new Font(OpenSans.Families[0], 12);
lblInstructions3.Text = "أو يمكنك البحث عن المكان الذي تريد الذهاب";
". إليه باستخدام زر البحث";
//Shop lables
CategoryComboBox.Items.Add("موضة");
CategoryComboBox.Items.Add("البقالة");
CategoryComboBox.Items.Add("الكترونيات");
}
else if (language == 3) //Polish
{
    //Language Select
    lblSelect.Text = "Proszę wybierz język";
    //Main Map
    lblMainText.Text = "Gdzie chciałbyś pójść?";
    //Main Map lables
    Searchlbl.Text = "Szukaj";
    Parkinglbl.Text = "Parking";
    Banklbl.Text = "Banks";
    Shopslbl.Text = "Sklepy";
    Foodlbl.Text = "Żywność";
    Discountlbl.Text = "Zniżki";
    Disabledlbl.Text = "Wyłączony";
    Disabledlbl2.Text = "Udogodnienia";
    FireExitlbl.Text = "Wyjście pożarowe";
    Helplbl.Text = "Pomoc";
    //Accessiblility lables
    Textlbl.Text = "Tekst";
    sizelbl.Text = "Rozmiar";
    Changelbl.Text = "Zmiana";
    Languagelbl.Text = "Język";
    TextTolbl.Text = "Wyślij SMS-a do";
    Speachlbl.Text = "Przemówienie";
    //Button Lables
    PrivateFontCollection OpenSans = new
PrivateFontCollection();
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\FONTs\static\OpenSans-Bold.ttf");
    lblParking.Visible = true;
    lblParking.Font = new Font(OpenSans.Families[0], 7);

```

```
lblParking.Text = "Parking znajduje się z tyłu Poundland";  
lblBanks.Font = new Font(OpenSans.Families[0], 10);  
lblBanks.Text = "Wszystkie banki znajdują się na Crown  
Street";  
Accessibilitylbl.Font = new Font(OpenSans.Families[0], 7);  
Accessibilitylbl.Text = "Winda dla osób niepełnosprawnych  
znajduje się w pobliżu toalet.";  
lblFireExit.Font = new Font(OpenSans.Families[0], 9);  
lblFireExit.Text = "Wyjście pożarowe znajduje się w pobliżu  
Wilko.";  
lblTextOutput.Font = new Font(OpenSans.Families[0], 10);  
lblTextOutput.Text = "Kliknij dowolny tekst, aby przeczytać  
go na głos.";  
lblInstructions.Font = new Font(OpenSans.Families[0], 10);  
lblInstructions.Text = "-Pokazana mapa jest mapą całej  
dzielnicy handlowej.";  
lblInstructions2.Font = new Font(OpenSans.Families[0], 9);  
lblInstructions2.Text = "-Możesz wybrać, gdzie się udać,  
używając przycisków na dole ekranu";  
lblInstructions3.Font = new Font(OpenSans.Families[0], 9);  
lblInstructions3.Text = "lub możesz wyszukać, gdzie się  
udać, używając przycisku wyszukiwania.";  
//Shop lables  
CategoryComboBox.Items.Add("Moda");  
CategoryComboBox.Items.Add("Artykuły spożywcze");  
CategoryComboBox.Items.Add("Elektronika");  
}  
else if (language == 4) //German  
{  
//Language Select  
lblSelect.Text = "Bitte wähle eine Sprache:";  
//Main Map  
lblMainText.Text = "Wo würdest du gerne hingehen?";  
//Main Map Lables  
Searchlbl.Text = "Suchen";  
Parkinglbl.Text = "Parken";  
Banklbl.Text = "Banken";  
Shopslbl.Text = "Geschäfte";  
Foodlbl.Text = "Essen";  
Discountlbl.Text = "Rabatt";  
Disabledlbl.Text = "Behinderte";  
Disabledlbl2.Text = "Einrichtungen";  
FireExitlbl.Text = "Notausgang";  
Helplbl.Text = "Hilfe";  
//Accessibility lables  
Textlbl.Text = "Text";  
sizelbl.Text = "Größe";
```

```
        Changelbl.Text = "Ändern";
        Languagelbl.Text = "Sprache";
        TextTolbl.Text = "Text an";
        Speachlbl.Text = "Rede";
        //Button Lables
        PrivateFontCollection OpenSans = new
PrivateFontCollection();
        OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\FONTs\static\OpenSans-Bold.ttf");
        lblParking.Visible = true;
        lblParking.Font = new Font(OpenSans.Families[0], 10);
        lblParking.Text = "Der Parkplatz befindet sich dahinter
Poundland";
        lblBanks.Font = new Font(OpenSans.Families[0], 10);
        lblBanks.Text = "Alle Banken befinden sich auf Crown
Straße";
        Accessibilitylbl.Font = new Font(OpenSans.Families[0], 7);
        Accessibilitylbl.Text = "Der barrierefreie Aufzug befindet
sich in der Nähe der Toiletten.";
        lblTextOutput.Font = new Font(OpenSans.Families[0], 8);
        lblTextOutput.Text = "Klicken Sie auf einen beliebigen
Text, um ihn laut vorzulesen.";
        lblInstructions.Font = new Font(OpenSans.Families[0], 9);
        lblInstructions.Text = "-Die angezeigte Karte ist die Karte
des gesamten Einkaufsviertels.";
        lblInstructions2.Font = new Font(OpenSans.Families[0], 6);
        lblInstructions2.Text = "-Mit den Schaltflächen am unteren
Bildschirmrand können Sie auswählen, wohin Sie gehen möchten";
        lblInstructions3.Font = new Font(OpenSans.Families[0], 6);
        lblInstructions3.Text = "Alternativ können Sie mithilfe der
Suchschaltfläche suchen, wohin Sie gehen sollen.";
        //Shop lables
        CategoryComboBox.Items.Add("Mode");
        CategoryComboBox.Items.Add("Lebensmittel");
        CategoryComboBox.Items.Add("Elektronik");
    }
    else if (language == 5) //French
    {
        //Language Select
        lblSelect.Text = "Veuillez sélectionner une langue:";
        //Main Map
        lblMainText.Text = "Où voudrais-tu aller?";
        //Main map lables
        Searchlbl.Text = "Recherche";
        Parkinglbl.Text = "Parking";
        Banklbl.Text = "Banques";
        Shopslbl.Text = "Magasins";
    }
}
```

```
Foodlbl.Text = "Nourriture";
Discountlbl.Text = "Rabais";
Disabledlbl.Text = "Désactivé";
Disabledlbl2.Text = "Installations";
FireExitlbl.Text = "Sortie de secours";
Helplbl.Text = "Aider";
//Accessibility lables
Textlbl.Text = "Texte";
sizelbl.Text = "Taille";
Changelbl.Text = "Changement";
Languagelbl.Text = "Langue";
TextTolbl.Text = "Envoyer par SMS";
Speechlbl.Text = "Discours";
//Button Lables
PrivateFontCollection OpenSans = new
PrivateFontCollection();
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\FONTs\static\OpenSans-Bold.ttf");
    lblParking.Visible = true;
    lblParking.Font = new Font(OpenSans.Families[0], 12);
    lblParking.Text = "Le parking est situé derrière
Poundland";
    lblBanks.Font = new Font(OpenSans.Families[0], 9);
    lblBanks.Text = "Toutes les banques sont situées dans la
rue Crown Street";
    Accessibilitylbl.Font = new Font(OpenSans.Families[0], 8);
    Accessibilitylbl.Text = "L'ascenseur d'accessibilité est
situé à proximité des toilettes.";
    lblTextOutput.Font = new Font(OpenSans.Families[0], 9);
    lblTextOutput.Text = "Cliquez sur n'importe quel texte pour
le lire à voix haute.";
    lblInstructions.Font = new Font(OpenSans.Families[0], 8);
    lblInstructions.Text = "-La carte affichée est la carte de
l'ensemble du quartier commerçant.";
    lblInstructions2.Font = new Font(OpenSans.Families[0], 8);
    lblInstructions2.Text = "-Vous pouvez sélectionner où aller
en utilisant les boutons en bas de l'écran";
    lblInstructions3.Font = new Font(OpenSans.Families[0], 8);
    lblInstructions3.Text = "ou vous pouvez rechercher où aller
en utilisant le bouton de recherche.";
    //Shop lables
    CategoryComboBox.Items.Add("Mode");
    CategoryComboBox.Items.Add("Épicerie");
    CategoryComboBox.Items.Add("Électronique");
}
else if (language == 6) //Spanish
{
```

```
//Language Select
lblSelect.Text = "Por favor, seleccione un idioma:";
//Main Map
lblMainText.Text = "Dónde te gustaría ir?";
//Main Map lables
Searchlbl.Text = "Buscar";
Parkinglbl.Location = new Point(105, 636);
Parkinglbl.Text = "Estacionamiento";
Banklbl.Text = "Bancos";
Shopslbl.Text = "tiendas";
Foodlbl.Text = "Alimento";
Discountlbl.Text = "Descuentos";
Disabledlbl.Text = "Instalaciones";
Disabledlbl2.Text = "discapacitados";
FireExitlbl.Text = "Salida de incendios";
Helplbl.Text = "Ayuda";
//Accessibility lables
Textlbl.Text = "texto";
sizelbl.Text = "Tamaño";
Changelbl.Text = "Cambiar";
Languagelbl.Text = "Idioma";
TextTolbl.Text = "Texto a";
Speachlbl.Text = "Discurso";
//Button Lables
PrivateFontCollection OpenSans = new
PrivateFontCollection();
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment
2\Fonts\static\OpenSans-Bold.ttf");
        lblParking.Visible = true;
        lblParking.Font = new Font(OpenSans.Families[0], 10);
        lblParking.Text = "El aparcamiento se encuentra detrás
Poundland";
        lblBanks.Font = new Font(OpenSans.Families[0], 8);
        lblBanks.Text = "Toutes les banques sont situées dans la
rue Crown Street";
        Accessibilitylbl.Font = new Font(OpenSans.Families[0], 9);
        Accessibilitylbl.Text = "El ascensor de accesibilidad se
encuentra cerca de los aseos.";
        lblTextOutput.Font = new Font(OpenSans.Families[0], 10);
        lblTextOutput.Text = "Haga clic en cualquier texto para
leerlo en voz alta.";
        lblInstructions.Font = new Font(OpenSans.Families[0], 9);
        lblInstructions.Text = "-El mapa que se muestra es el Mapa
de todo el distrito comercial.";
        lblInstructions2.Font = new Font(OpenSans.Families[0], 7);
        lblInstructions2.Text = "-Puedes seleccionar a dónde ir
usando los botones en la parte inferior de la pantalla";
```

```
        lblInstructions3.Font = new Font(OpenSans.Families[0], 7);
        lblInstructions3.Text = "o puede buscar a dónde ir usando
el botón de búsqueda.";
        //Shop lables
        CategoryComboBox.Items.Add("Moda");
        CategoryComboBox.Items.Add("Comestibles");
        CategoryComboBox.Items.Add("Electrónica");
    }
    LanguagePanel.Visible = false;
    MainPanel.Visible = true;
}
//Changing the language when the user clicks the flag.
private void picboxEngland_Click(object sender, EventArgs e)
{
    ChangeLanguage(1);
}

private void picboxGerman_Click(object sender, EventArgs e)
{
    ChangeLanguage(4);
}

private void pictureBox4_Click(object sender, EventArgs e)
{
    ChangeLanguage(2);
}

private void pictureBox3_Click(object sender, EventArgs e)
{
    ChangeLanguage(3);
}
private void picBoxFrench_Click(object sender, EventArgs e)
{
    ChangeLanguage(5);
}

private void PicBoxSpanish_Click(object sender, EventArgs e)
{
    ChangeLanguage(6);
}

private void Shoppingbtn_Click(object sender, EventArgs e)
{
    Foodpn1.Visible = false;
    Discountpn1.Visible = false;
    Shoppingpn1.Visible = true;
```

```
}

private void Disabledlbl_Click(object sender, EventArgs e)
{
    voice.Speak(Discountlbl.Text);
}

private void HambrgMenu_Click(object sender, EventArgs e)
{
    MoreOptionspnl.Visible = true;
}
//hiding/showing redundant panels and lables
private void MainPanel_Paint(object sender, PaintEventArgs e)
{
    MoreOptionspnl.Visible = false;
    CurrentLocation.Visible = false;
    lblParking.Visible = false;
    lblMainText.Visible = true;
    lblBanks.Visible = false;
    Accessibilitylbl.Visible = false;
    lblFireExit.Visible = false;
    lblTextOutput.Visible = false;
    HelpPnl.Visible = false;
    Searchpnl.Visible = false;
    Shoppingpnl.Visible = false;
    Foodpnl.Visible = false;
    Discountpnl.Visible = false;
}

private void HambrgMenuClose_Click(object sender, EventArgs e)
{
    MoreOptionspnl.Visible = false;
}

private void LanguageChangebtn_Click(object sender, EventArgs e)
{
    LanguagePanel.Visible = true;
    MainPanel.Visible = false;
}
//Zooming in and out
private void Zoomin_Click(object sender, EventArgs e)
{
    ShoppingMap.Size = new Size(491, 498);
    buttonBox.Visible = true;
}

private void Zoomout_Click(object sender, EventArgs e)
```

```
{  
    ShoppingMap.Size = new Size(377, 366);  
}  
//making the Text size bigger  
private void TextSizebtn_Click(object sender, EventArgs e)  
{  
    PrivateFontCollection OpenSans = new PrivateFontCollection();  
    PrivateFontCollection ProximaNova = new  
PrivateFontCollection();  
    //Open sans  
    OpenSans.AddFontFile(@"G:\My Drive\Unit 10\Assignment  
2\FONTs\static\OpenSans-Bold.ttf");  
    lblSelect.Font = new Font(OpenSans.Families[0], 17,  
FontStyle.Bold);  
    lblMainText.Font = new Font(OpenSans.Families[0], 17,  
FontStyle.Bold);  
  
    //Proxima nova  
    ProximaNova.AddFontFile(@"G:\My Drive\Unit 10\Assignment  
2\FONTs\Proxima Nova Font.otf");  
    Searchlbl.Font = new Font(ProximaNova.Families[0], 13);  
    Parkinglbl.Font = new Font(ProximaNova.Families[0], 13);  
    Banklbl.Font = new Font(ProximaNova.Families[0], 13);  
    Shopslbl.Font = new Font(ProximaNova.Families[0], 13);  
    Foodlbl.Font = new Font(ProximaNova.Families[0], 13);  
    Discountlbl.Font = new Font(ProximaNova.Families[0], 13);  
    Disabledlbl.Font = new Font(ProximaNova.Families[0], 13);  
    Disabledlbl2.Font = new Font(ProximaNova.Families[0], 13);  
    FireExitlbl.Font = new Font(ProximaNova.Families[0], 13);  
    Helplbl.Font = new Font(ProximaNova.Families[0], 13);  
    Textlbl.Font = new Font(ProximaNova.Families[0], 13);  
    sizelbl.Font = new Font(ProximaNova.Families[0], 13);  
    Changelbl.Font = new Font(ProximaNova.Families[0], 13);  
    Languagelbl.Font = new Font(ProximaNova.Families[0], 13);  
    TextTolbl.Font = new Font(ProximaNova.Families[0], 13);  
    Speachlbl.Font = new Font(ProximaNova.Families[0], 13);  
}  
//As the location of the text is always the same, some have to be  
hidden and shown when the user clicks on the relevant button.  
private void Parkingbtn_Click(object sender, EventArgs e)  
{  
    CurrentLocation.Visible = true;  
    CurrentLocation.Location = new Point(169, 160);  
    lblMainText.Visible = false;  
    lblParking.Visible = true;  
    lblBanks.Visible = false;  
    Accessibilitylbl.Visible = false;
```

```
        lblFireExit.Visible = false;
        lblTextOutput.Visible = false;
    }

    private void Bankbtn_Click(object sender, EventArgs e)
    {
        CurrentLocation.Visible = true;
        CurrentLocation.Location = new Point(347, 294);
        lblBanks.Visible = true;
        lblParking.Visible = false;
        lblMainText.Visible = false;
        Accessibilitylbl.Visible = false;
        lblFireExit.Visible = false;
        lblTextOutput.Visible = false;
    }

    private void Accessibilitybtn_Click(object sender, EventArgs e)
    {
        CurrentLocation.Visible = true;
        CurrentLocation.Location = new Point(132, 184);
        lblMainText.Visible = false;
        lblParking.Visible = false;
        lblBanks.Visible = false;
        Accessibilitylbl.Visible = true;
        lblFireExit.Visible = false;
        lblTextOutput.Visible = false;
    }

    private void Firebtn_Click(object sender, EventArgs e)
    {
        CurrentLocation.Visible = true;
        CurrentLocation.Location = new Point(25, 273);
        lblMainText.Visible = false;
        lblParking.Visible = false;
        lblFireExit.Visible = true;
        lblBanks.Visible = false;
        Accessibilitylbl.Visible = false;
        lblTextOutput.Visible = false;
    }

    private void Location_Click(object sender, EventArgs e)
    {

    }

    private void TextToSpeechbtn_Click(object sender, EventArgs e)
    {
```

```
        voice.SelectVoiceByHints(VoiceGender.Male);
        CurrentLocation.Location = new Point(25, 273);
        lblMainText.Visible = false;
        lblParking.Visible = false;
        lblFireExit.Visible = false;
        lblBanks.Visible = false;
        Accessibilitylbl.Visible = false;
        lblTextOutput.Visible = true;
        voice.Speak(lblTextOutput.Text);
    }
    //Text to speech
    private void lblMainText_Click(object sender, EventArgs e)
    {
        voice.Speak(lblMainText.Text);
    }

    private void lblParking_Click(object sender, EventArgs e)
    {
        voice.Speak(lblParking.Text);
    }

    private void lblParking_Click_1(object sender, EventArgs e)
    {
        voice.Speak(Parkinglbl.Text);
    }

    private void lblBanks_Click(object sender, EventArgs e)
    {
        voice.Speak(lblBanks.Text);
    }

    private void Accessibilitylbl_Click(object sender, EventArgs e)
    {
        voice.Speak(Accessibilitylbl.Text);
    }

    private void lblFireExit_Click(object sender, EventArgs e)
    {
        voice.Speak(lblFireExit.Text);
    }

    private void Textlbl_Click(object sender, EventArgs e)
    {
        voice.Speak(Textlbl.Text);
    }

    private void sizelbl_Click(object sender, EventArgs e)
```

```
{  
    voice.Speak(sizelbl.Text);  
}  
  
private void Changelbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(Changelbl.Text);  
}  
  
private void Languagelbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(Languagelbl.Text);  
}  
  
private void TextTolbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(TextTolbl.Text);  
}  
  
private void Speachlbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(Speachlbl.Text);  
}  
  
private void lblTextOutput_Click(object sender, EventArgs e)  
{  
}  
  
private void MoreOptionspn1_Paint(object sender, PaintEventArgs e)  
{  
}  
  
private void Searchlbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(Searchlbl.Text);  
}  
  
private void Parkinglbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(Parkinglbl.Text);  
}  
  
private void Banklbl_Click(object sender, EventArgs e)  
{  
    voice.Speak(Banklbl.Text);  
}
```

```
}

private void Shopslbl_Click(object sender, EventArgs e)
{
    voice.Speak(Shopslbl.Text);
}

private void Foodlbl_Click(object sender, EventArgs e)
{
    voice.Speak(Foodlbl.Text);
}

private void Discountlbl_Click(object sender, EventArgs e)
{
    voice.Speak(Discountlbl.Text);
}

private void Disabledlbl2_Click(object sender, EventArgs e)
{
    voice.Speak(Disabledlbl2.Text);
}

private void FireExitlbl_Click(object sender, EventArgs e)
{
    voice.Speak(FireExitlbl.Text);
}

private void Helplbl_Click(object sender, EventArgs e)
{
    voice.Speak(Helplbl.Text);
}

private void lblSelect_Click(object sender, EventArgs e)
{
    voice.Speak(lblSelect.Text);
}

private void lblEnglish_Click(object sender, EventArgs e)
{
    voice.Speak(lblEnglish.Text);
}

private void lblGerman_Click(object sender, EventArgs e)
{
    voice.Speak(lblGerman.Text);
}
```

```
private void lblDeutch_Click(object sender, EventArgs e)
{
    voice.Speak(lblDeutch.Text);
}

private void label3_Click(object sender, EventArgs e)
{
    voice.Speak(label3.Text);
}

private void lblErabic_Click(object sender, EventArgs e)
{
    voice.Speak(lblErabic.Text);
}

private void lblPolish_Click(object sender, EventArgs e)
{
    voice.Speak(lblPolish.Text);
}

private void lblPolski_Click(object sender, EventArgs e)
{
    voice.Speak(lblPolski.Text);
}

private void label1_Click(object sender, EventArgs e)
{
    voice.Speak(label1.Text);
}

private void label2_Click(object sender, EventArgs e)
{
    voice.Speak(label2.Text);
}

private void label4_Click(object sender, EventArgs e)
{
    voice.Speak(label4.Text);
}

private void label5_Click(object sender, EventArgs e)
{
    voice.Speak(label5.Text);
}

private void HelpbtnClose_Click(object sender, EventArgs e)
{
```

```
    Helppnl.Visible = false;
}

private void Helpbtn_Click(object sender, EventArgs e)
{
    Helppnl.Visible = true;
}
//creating the search bar
List<string> listcollection = new List<string>();
private void Searchbar_TextChanged(object sender, EventArgs e)
{
    if (string.IsNullOrEmpty(Searchbar.Text) == false)
    {
        Searchlistbox.Items.Clear();
        foreach (string str in listcollection)
        {
            if (str.StartsWith(Searchbar.Text))
            {
                Searchlistbox.Items.Add(str);
            }
        }
    }
    else if (Searchbar.Text == "")
    {
        Searchlistbox.Items.Clear();
        foreach (string str in listcollection)
        {
            Searchlistbox.Items.Add(str);
        }
    }
//search results
if (Searchbar.Text == "Parking")
{
    CurrentLocation.Visible = true;
    CurrentLocation.Location = new Point(169, 160);
    lblMainText.Visible = false;
    lblParking.Visible = true;
    lblBanks.Visible = false;
    Accessibilitylbl.Visible = false;
    lblFireExit.Visible = false;
    lblTextOutput.Visible = false;
}
else if (Searchbar.Text == "Banks")
{
    CurrentLocation.Visible = true;
    CurrentLocation.Location = new Point(347, 294);
    lblBanks.Visible = true;
```

```
        lblParking.Visible = false;
        lblMainText.Visible = false;
        Accessibilitylbl.Visible = false;
        lblFireExit.Visible = false;
        lblTextOutput.Visible = false;
    }
    else if (Searchbar.Text == "Disabled Facilities")
    {
        CurrentLocation.Visible = true;
        CurrentLocation.Location = new Point(132, 184);
        lblMainText.Visible = false;
        lblParking.Visible = false;
        lblBanks.Visible = false;
        Accessibilitylbl.Visible = true;
        lblFireExit.Visible = false;
        lblTextOutput.Visible = false;
    }
    else if (Searchbar.Text == "Fire exits")
    {
        CurrentLocation.Visible = true;
        CurrentLocation.Location = new Point(25, 273);
        lblMainText.Visible = false;
        lblParking.Visible = false;
        lblFireExit.Visible = true;
        lblBanks.Visible = false;
        Accessibilitylbl.Visible = false;
        lblTextOutput.Visible = false;
    }
    else if (Searchbar.Text == "Help")
    {
        HelpPnl.Visible = true;
    }
}

private void Searchbtn_Click(object sender, EventArgs e)
{
    SearchPnl.Visible = true;
}

private void SearchPnlClose_Click(object sender, EventArgs e)
{
    SearchPnl.Visible = false;
}
//Giving the same location using combo boxes depending on the
language
private void CategoryComboBox_SelectedIndexChanged(object sender,
EventArgs e)
```

```
{  
    if (CategoryComboBox.Text == "Fashion" || CategoryComboBox.Text  
== "Moda" || CategoryComboBox.Text == "موضة" || CategoryComboBox.Text ==  
"Mode")  
    {  
        FashionComboBox.Visible = true;  
        GroceriesComboBox.Visible = false;  
        ElectronicsComboBox.Visible = false;  
    }  
    else if (CategoryComboBox.Text == "Groceries" ||  
CategoryComboBox.Text == "البقالة" || CategoryComboBox.Text == "Artykuły  
spożywcze" || CategoryComboBox.Text == "Lebensmittel" ||  
CategoryComboBox.Text == "Épicerie" || CategoryComboBox.Text ==  
"Comestibles")  
    {  
        GroceriesComboBox.Visible = true;  
        FashionComboBox.Visible = false;  
        ElectronicsComboBox.Visible = false;  
    }  
    else if (CategoryComboBox.Text == "Electronics" ||  
CategoryComboBox.Text == "الكترونيات" || CategoryComboBox.Text == "Elektronika"  
|| CategoryComboBox.Text == "Elektronik" || CategoryComboBox.Text ==  
"Électronique" || CategoryComboBox.Text == "Electrónica")  
    {  
        ElectronicsComboBox.Visible = true;  
        GroceriesComboBox.Visible = false;  
        FashionComboBox.Visible = false;  
    }  
}  
  
private void Shoppingpnl_Paint(object sender, PaintEventArgs e)  
{  
}  
  
}  
  
private void Shopsbtnclose_Click(object sender, EventArgs e)  
{  
    Shoppingpnl.Visible = false;  
}  
  
private void FashionComboBox_SelectedIndexChanged(object sender,  
EventArgs e)  
{  
    if (FashionComboBox.Text == "Exit Shoes")  
    {  
        CurrentLocation.Location = new Point(175, 310);  
        CurrentLocation.Visible = true;  
    }  
}
```

```
        }

        else if (FashionComboBox.Text == "Style and Beauty")
        {
            CurrentLocation.Location = new Point(233, 311);
            CurrentLocation.Visible = true;
        }
        else if (FashionComboBox.Text == "Peacocks")
        {
            CurrentLocation.Location = new Point(300, 304);
            CurrentLocation.Visible = true;
        }
        else if (FashionComboBox.Text == "Belson & Shoes")
        {
            CurrentLocation.Location = new Point(191, 338);
            CurrentLocation.Visible = true;
        }
        else if (FashionComboBox.Text == "Shoe Zone")
        {
            CurrentLocation.Location = new Point(143, 362);
            CurrentLocation.Visible = true;
        }
    }

private void ShoppingMap_Click(object sender, EventArgs e)
{
}

private void GroceriesComboBox_SelectedIndexChanged(object sender,
EventArgs e)
{
    if (GroceriesComboBox.Text == "Poundland")
    {
        CurrentLocation.Location = new Point(176, 240);
        CurrentLocation.Visible = true;
    }
    else if (GroceriesComboBox.Text == "Savers")
    {
        CurrentLocation.Location = new Point(213, 311);
        CurrentLocation.Visible = true;
    }
    else if (GroceriesComboBox.Text == "Iceland")
    {
        CurrentLocation.Location = new Point(271, 311);
        CurrentLocation.Visible = true;
    }
    else if (GroceriesComboBox.Text == "QD Stores")
```

```
{  
    CurrentLocation.Location = new Point(244, 327);  
    CurrentLocation.Visible = true;  
}  
else if (GroceriesComboBox.Text == "Farm Foods")  
{  
    CurrentLocation.Location = new Point(72, 284);  
    CurrentLocation.Visible = true;  
}  
}  
  
private void ElectronicsComboBox_SelectedIndexChanged(object sender, EventArgs e)  
{  
    if (ElectronicsComboBox.Text == "All Things Mobile")  
    {  
        CurrentLocation.Location = new Point(132, 372);  
        CurrentLocation.Visible = true;  
    }  
    else if (ElectronicsComboBox.Text == "CEX")  
    {  
        CurrentLocation.Location = new Point(135, 323);  
        CurrentLocation.Visible = true;  
    }  
    else if (ElectronicsComboBox.Text == "Apple")  
    {  
        CurrentLocation.Location = new Point(31, 327);  
        CurrentLocation.Visible = true;  
    }  
}  
  
private void FoodbtnClose_Click(object sender, EventArgs e)  
{  
    Foodpnl.Visible = false;  
}  
  
private void FoodComboBox_SelectedIndexChanged(object sender, EventArgs e)  
{  
    if (FoodComboBox.Text == "Wimpy")  
    {  
        CurrentLocation.Location = new Point(148, 250);  
        CurrentLocation.Visible = true;  
    }  
    else if (FoodComboBox.Text == "Burger King")  
    {  
        CurrentLocation.Location = new Point(152, 417);  
    }  
}
```

```
        CurrentLocation.Visible = true;
    }
    else if (FoodComboBox.Text == "Costa")
    {
        CurrentLocation.Location = new Point(143, 444);
        CurrentLocation.Visible = true;
    }
    else if (FoodComboBox.Text == "Centre Cafe")
    {
        CurrentLocation.Location = new Point(35, 311);
        CurrentLocation.Visible = true;
    }
}

private void Foodbtn_Click(object sender, EventArgs e)
{
    Foodpnl.Visible = true;
    Discountpnl.Visible = false;
    Shoppingpnl.Visible = false;
}

private void Discountbtn_Click(object sender, EventArgs e)
{
    Foodpnl.Visible = false;
    Discountpnl.Visible = true;
    Shoppingpnl.Visible = false;
}

private void DiscountbtnClose_Click(object sender, EventArgs e)
{
    Discountpnl.Visible = false;
}

private void DiscountComboBox_SelectedIndexChanged(object sender,
EventArgs e)
{
    if (DiscountComboBox.Text == "20% Off Phone Accessories - All
Things Mobile")
    {
        CurrentLocation.Location = new Point(132, 372);
        CurrentLocation.Visible = true;
    }
    else if (DiscountComboBox.Text == "Free Airpods with purchase of
IPhone - Apple")
    {
        CurrentLocation.Location = new Point(31, 327);
        CurrentLocation.Visible = true;
    }
}
```

```
        }

        else if (DiscountComboBox.Text == "10% Off Any Furniture - QD
Stores")
    {
        CurrentLocation.Location = new Point(244, 327);
        CurrentLocation.Visible = true;
    }
}

private void Accessibilitypn1_Paint(object sender, PaintEventArgs
e)
{
}

private void lblInstructions_Click(object sender, EventArgs e)
{
    voice.Speak(lblInstructions.Text);
}

private void lblInstructions2_Click(object sender, EventArgs e)
{
    voice.Speak(lblInstructions2.Text);
}

private void lblInstructions3_Click(object sender, EventArgs e)
{
    voice.Speak(lblInstructions3.Text);
}
}
```

Test Plan:

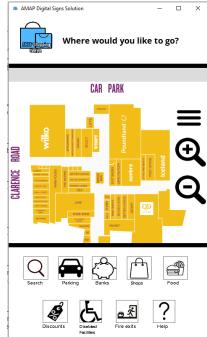
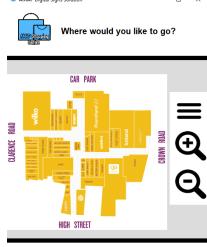
Test No.	Purpose of test	Test data	Expected result	Actual result	Comments
1	Display the language of text to English Normal	PicboxEngland	The language of all text on labels changes to English	The language of the labels changed to English text	Test Pass
2	Display the language of	picboxGerman	The	The	Test Pass

	text to German Normal		language of all text on labels changes to German	language of the labels changed to German text	
3	Display the language of text to Arabic Normal	Picturebox4	The language of all text on labels changes to Arabic	The language of the labels changed to Arabic text	Test Pass
4	Display the language of text to Polish Normal	pictureBox3	The language of all text on labels changes to Polish	The language of the labels changed to Polish text	Test Pass
5	Display the language of text to French Normal	PicboxFrench	The language of all text on labels changes to French	The language of the labels changed to French text	Test Pass
6	Display the language of text to Spanish Normal	PicboxSpanish	The language of all text on labels changes to Spanish	The language of the labels changed to Spanish text	Test Pass
7	Display results when a user enters information in the search bar. Normal	Searchbar.Text == "Parking", "Banks", "Disabled Facilities", "Fire exits", "Help"	The user enters a string and results show the user to their location	The user enters a string and the results show the intended location	Test Pass
8	Display suggestions of strings when a user	Searchbar.Text == ""	The current search	Search results are	Test Pass

	enters information in the search bar Abnormal		results will close and when the user types, new search results show up	shown based on what the user has typed in.	
9	Close the search bar when the user presses the cross button Normal	Searchpnl.visible = false;	The search bar is no longer visible	The search bar is no longer visible	Test Pass
10	Display the search bar when the user clicks on the button Normal	Searchpnl.visible = true;	The search bar is displayed	The search bar is displayed	Test Pass
11	Display the location of the car park when clicking the car park button Normal	CurrentLocation.Location = new Point(169,160);	The Location image has the location shown of the car park.	The Location image has the location shown of the car park.	Test Pass
12	Display the location of banks when clicking the banks button Normal	CurrentLocation.Location = new Point(347, 294);	The Location image has the location shown of banks.	The Location image has the location shown of banks.	Test Pass
13	Display the location of Disabled Facilities when clicking the Disabled Facilities button Normal	CurrentLocation.Location = new Point(132, 184);	The Location image has the location shown of Disabled Facilities.	The Location image has the location shown of Disabled Facilities.	Test Pass
14	Display the location of Fire exits when clicking the Fire exits button Normal	CurrentLocation.Location = new Point(25, 273);	The Location image has the location	The Location image has the location shown of	Test Pass

			shown of Fire exits.	Fire exits.	
15	Display the Shopping Panel when the user clicks on the shopping icon Normal	Shoppingpnl.visible = true;	The shopping Panel is shown	The shopping Panel is shown	Test Pass
16	Close the shopping panel when the user clicks on the cross icon Normal	Shoppingpnl.visible = false;	The shopping panel has been closed	The shopping panel has been closed	Test Pass
17	Display a set of shops once the user has selected the category of shops in a combo box Normal	Category ComboBox.Text == "Fashion", "Groceries", "Electronics"	The shops will be displayed in a separate combo box	The shops have been displayed	Test Pass
18	Display the location of shops Normal	CurrentLocation.Location = new Point();	The location of the shop is displayed depending on the shop chosen from the combo box	The location of the shop has been displayed.	Test Pass
19	Display the location of Restaurants Normal	CurrentLocation.Location = new Point();	The location of the restaurant is displayed depending on the restaurant chosen.	The location of the restaurant has been displayed.	Test Pass
20	Display the Food Panel when the user clicks on the Food icon Normal	Foodpnl.visible = true;	The Food Panel is shown	The shoppFoodPanel is shown	Test Pass

21	Close the Food panel when the user clicks on the cross icon Normal	Foodpnl.visible = false;	The Food panel has been closed	The Food panel has been closed	Test Pass
22	Display the location of Current Discounts Normal	CurrentLocation.Location = new Point();	The location of Discounts is displayed depending on the Discount chosen.	The location of the Discount has been displayed.	Test Pass
23	Display the Discount Panel when the user clicks on the Discount icon Normal	Discountpnl.visible = true;	The Discount Panel is shown	The Discount Panel is shown	Test Pass
24	Close the Discount panel when the user clicks on the cross icon Normal	Discountpnl.visible = false;	The Discount panel has been closed	The Discount panel has been closed	Test Pass
25	Display the Help Panel when the user clicks on the Help icon Normal	Helppnl.visible = true;	The Help Panel is shown	The Help panel is shown	Test Pass
26	Close the Help panel when the user clicks on the cross icon Normal	Helppnl.visible = false;	The Help panel has been closed	The Help panel has been closed	Test Pass
27	Zoom in to the map when the user clicks the zoom in button Normal	CurrentSize += 2.0F	The Map changes size	The Map did not change size	ShoppingMap.Size = new Size(491,498);

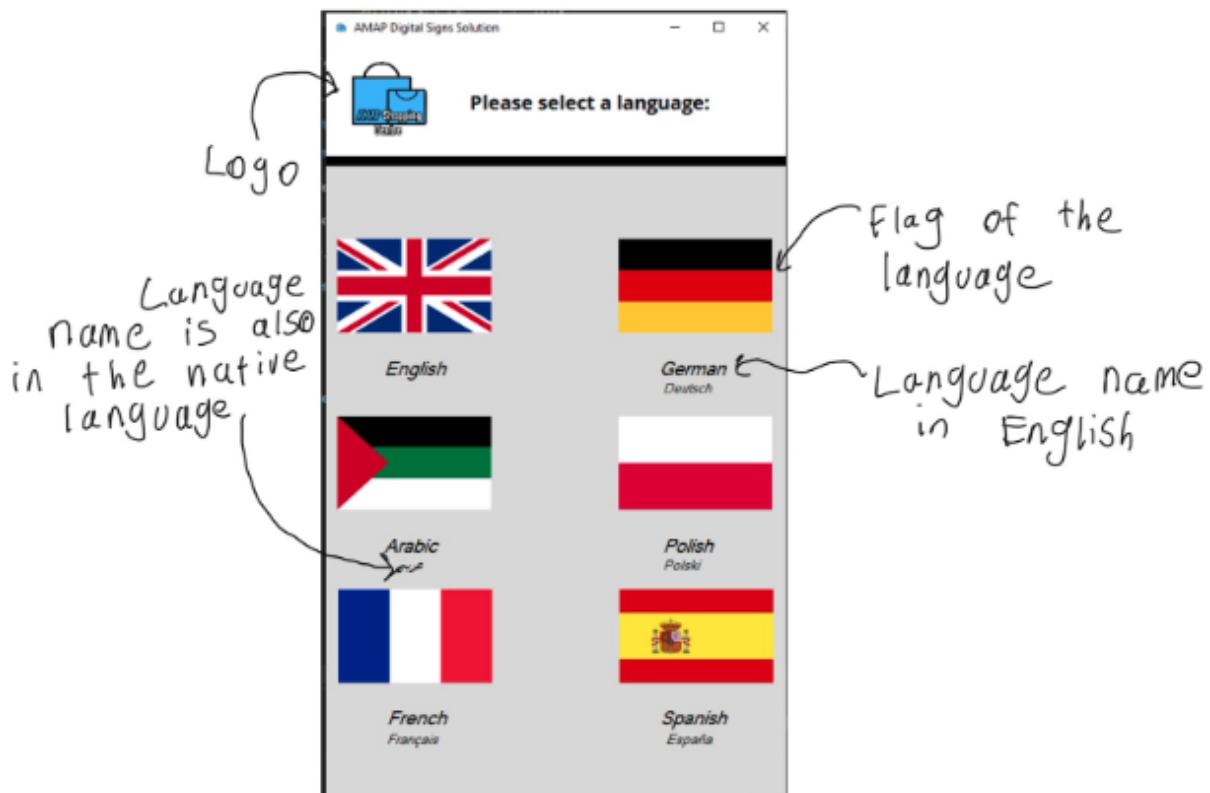
					
28	Zoom out of the map when the user clicks on the Zoom out button Normal	CurrentSize += 2.0F	The map changes back to its original size	The map did not change back to its original size	ShoppingMap .Size = new Size(377, 366); 
29	Display a menu with more accessibility options when clicking the hamburger menu icon Normal	MoreOptionspnl.visible = true;	A panel is displayed with more accessibility options	The panel is displayed	Test Pass
30	Close the menu with more accessibility options when the user clicks the cross button Normal	MoreOptionspnl.visible = false;	The panel is closed	The panel has been closed	Test Pass

31	Change the Text size when the user clicks the text size button Normal	<code>lblSelect.Font = new Font(OpenSans.Families[0], 17, FontStyle.Bold);</code> <code>Searchlbl.Font = new Font(ProximaNova.Families[0], 13);</code>	The font size is bigger	The Font size has grown bigger	Test Pass
32	Change the Language again when the user clicks on the change language button Normal	<code>LanguagePanel.Visible = true;</code>	The Language panel is displayed	The Language panel has been displayed	Test Pass
33	Enable Text to speech when the user clicks on the Text to speech button Normal	<code>voice.Speak(lblTextOutput.Text)</code>	A message telling the user that text to speech has been enabled and that clicking on any text will read it out loud is displayed in Text and Text to Speech	The message is displayed in Text to Speech and regular Text	Test Pass
34	Import the Proxima Nova Custom Font Normal	<code>PrivateFontCollection ProximaNova = new PrivateFontCollection();</code>	The font is imported and applied to text	The font has been imported	Test Pass
35	Import the Open Sans Custom Font Normal	<code>PrivateFontCollection OpenSans = new PrivateFontCollection();</code>	The font is imported and applied to text	The font has been imported	Test Pass

Review of HCI Solution

After sending my feedback to 4 other people about my program, I have received feedback, both good and bad, about my program to help me decide to optimise the content or not.

This is the first screen of my program, allowing the user to select a language. Please comment your opinion on the screen.



Long-answer text

This is the first screen of my program, allowing the user to select a language. Please comment your opinion on the screen.

4 responses

Very nice, love the images and the translated names. Good this is on the first screen

Good range of languages, which element does the user interacts with in order to change the language (text or flag)?

This looks great and provides good accessibility but could use a few more languages to be more accessible.

I think that it is very intuitive, and allows for easy translation of languages. These are common in the UK, making this a viable selection.

The first question I asked was about the language selection screen for my program and the feedback I had received was mostly positive, saying that this was good that the user starts off with selecting their language first and that it is a good accessibility feature to include and is intuitive for the user to use by including the name of the language in both English as well as its native language and putting the flag of the language as well. There was one piece of feedback however that asked for more languages to make the form more accessible however whilst this does make accessibility easier, I believe that there are no further languages that need to be added. This is because there are a large range of languages already available on the screen, with most of these being very common where the system is going to be used, so most users will not have a problem when using the system. In addition to this, English is also included which is the most common language in the world, so even users that may now know the other languages can at least understand most English.

This is the Home menu of my program, where the user can select what they would like to do. Please state your opinion on this.



Long-answer text

This is the Home menu of my program, where the user can select what they would like to do.
Please state your opinion on this.

4 responses

The labels for the icons is good just in case someone didn't know what they meant and you have included all of the categories stated in the requirements in the brief

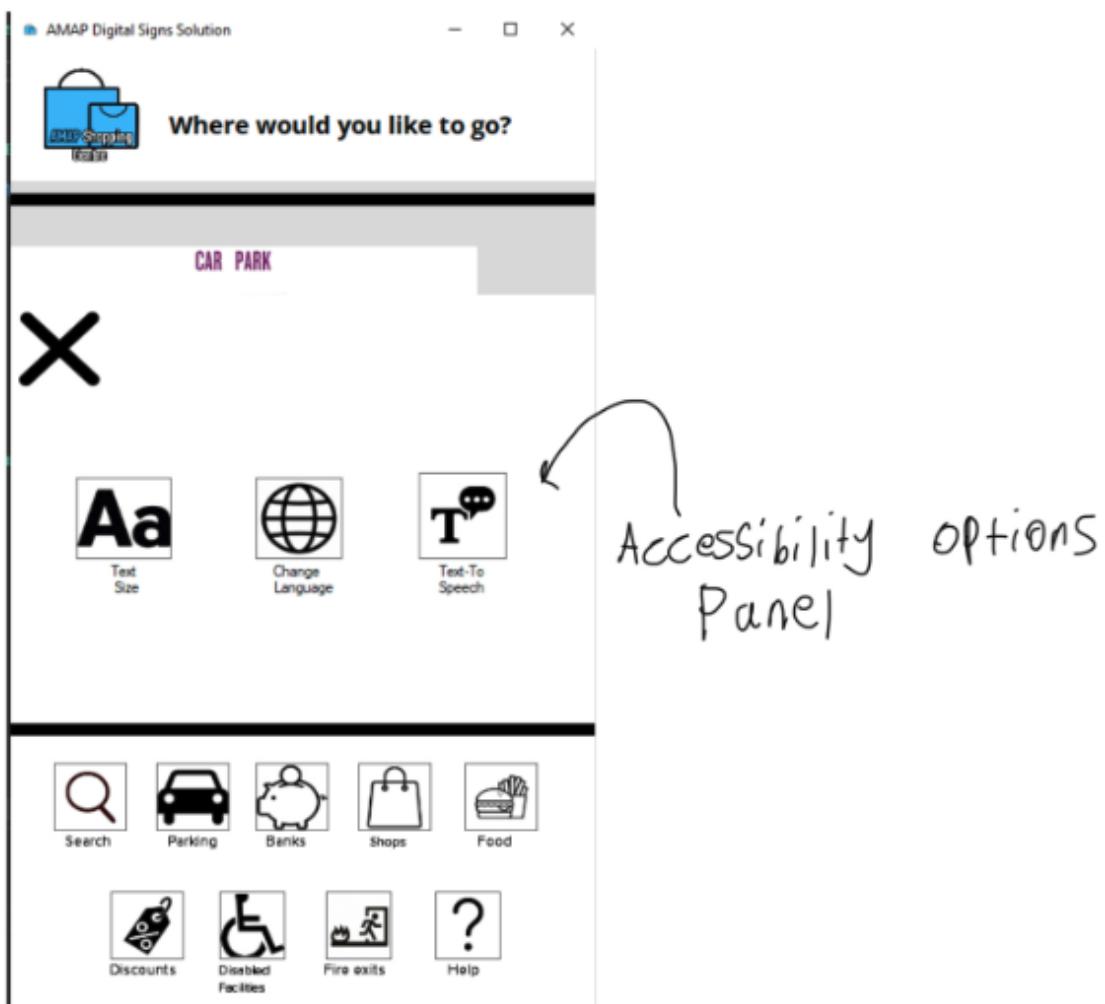
Would likely be more fluid if navigation buttons are below the title/question as it is both universally standard that navigation methods are at the top of the screen as well as being more fluid for the user to go from the question which states the pages purpose to its actions

This page looks great, the icons are well sized and clear on what they do. The functionality looks good. The map is clear although it's a bit small at default size.

The icon buttons could have more style and emphasis, everything else is good.

With the second question, I had asked for feedback with the home menu I created. As with the previous question, most of the feedback received was positive but this time around, there were a few small things that needed to be changed. With the positive feedback, I had been told that the layout is great and the icons are well explained and include everything required by the brief, meeting client requirements as well as user requirements and making using the system easy for its users by clearly defining what each icon does. In terms of some improvements however, one was stating that the title/question should be nearer to the buttons so that it is more fluid for the user when they perform an action. Whilst this is understandable and may improve accessibility, I believe that making it stay at the top works better for my application. This is because the logo is also at the top so if I were to move the instruction down, there would be a waste of space. In addition to this, this could also make the application too cluttered by making elements be together more, which could make users feel overwhelmed. As for the standard map size, whilst it is a little bit too small, I believe that it is the right size and does not need to be optimised. This is because the form is already small enough so if it were to be bigger, then elements could overlap and once again, this could lead to the form being cluttered. There is also the option to increase the size of the form for users that may think the form is too small. As for the final piece of feedback, the feedback states that the icon buttons could have more styling added to them to help the icons be emphasised more. This is a piece of feedback that I agree to optimise because I believe that more styling can be added to them to help emphasise that they are buttons that the user can click, as well as help make them be more separated from each other. This will be changed by making the background colour of the icons a little bit darker.

This is a panel connected to the hamburger menu that shows all the accessibility features I have included. Please state your opinion on this.



Long-answer text

This is a panel connected to the hamburger menu that shows all the accessibility features I have included. Please state your opinion on this.

4 responses

The consistency of the icons and colour theme so far is good and nice choices of accessibility features. You might alrighty have this sorted but make sure that when text size increases, nothing overlaps and have a maximum and minimum if there isn't already

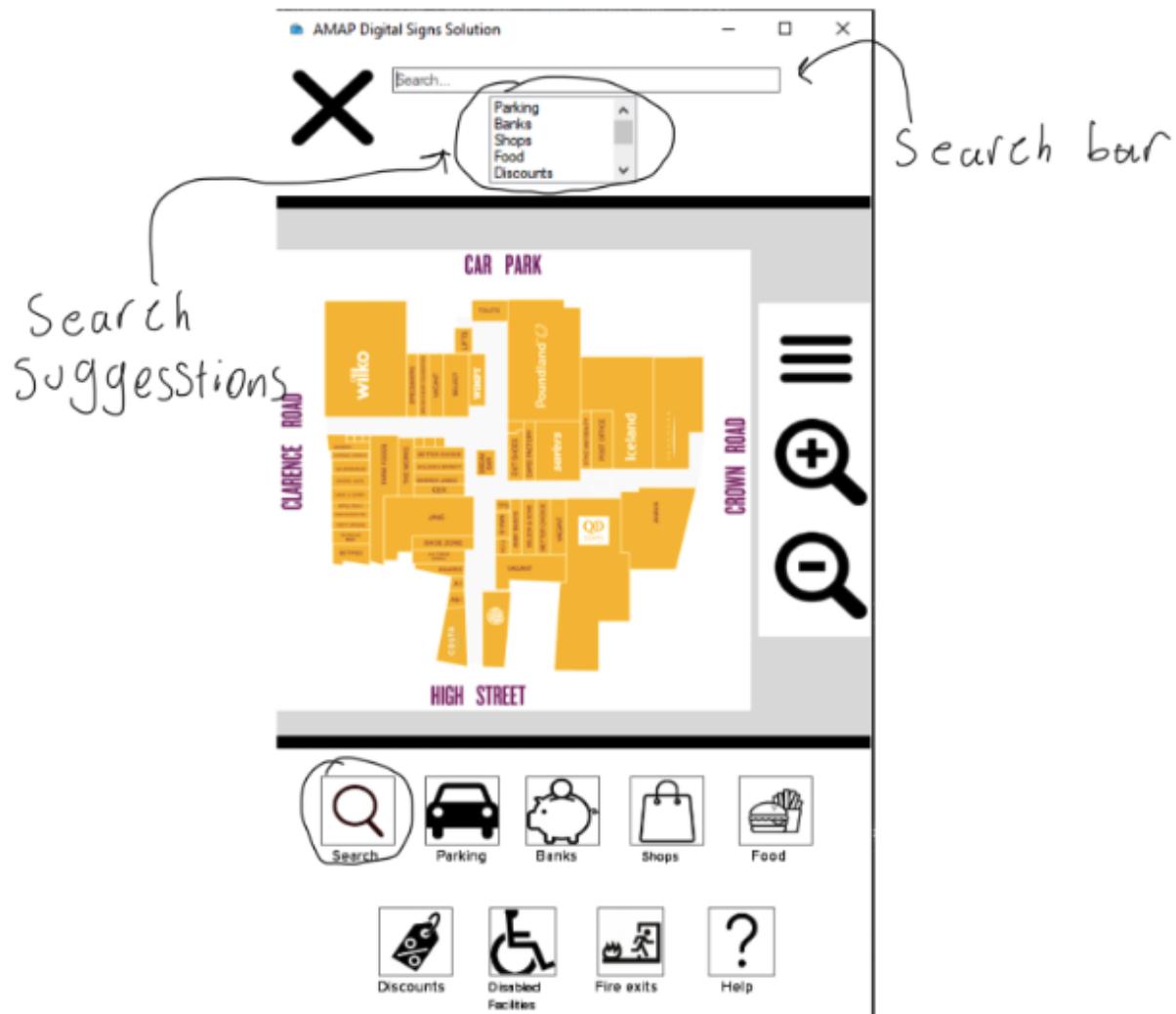
could be more compact as to not waste room as well as let users use multiple features at once

The text-to-speech is good for visually impired users but does it include audio input?

Again, make buttons more intuitive with things like a different background color, or shadows. Button sizes however, are good.

The third question I asked was about the accessibility options panel. The feedback I had received was positive but did have some small things to change as well. With the first piece of feedback, it had said about text overlapping with these features. This has not been sorted and will need to be optimised because it can make the text hard to read for some users, so I will go ahead and optimise this feature as well. With the second piece of feedback, you can use multiple features at once however, whilst the panel does use a lot of space and space can be saved by making it more compact, making the panel use a lot of space can be useful for the user because they can see that they have selected the panel instead of it using left space. In addition to this, it also looks more visually appealing and links with other panels that are also the same size and have a pop up, such as the help panel. As for including audio input however, I have decided not to include this feature. This is because whilst it does help for users with these problems, the system will be used in a loud setting and so, it can make understanding what the user will say very difficult and can make users more frustrated than being a useful addition. With the final piece of feedback. I also need to consider making these buttons and backgrounds more intuitive to users by making it stand out so that elements are split more apart from each other to make the form easier to use.

This is a button that allows users to search for anything they want, once the search result is typed in with the suggestions box, the location of that search result is shown. Please state your opinion on this.



This is a button that allows users to search for anything they want, once the search result is typed in with the suggestions box, the location of that search result is shown. Please state your opinion on this.

4 responses

As things are searched, do suggestions come up or does the user have to type out the whole thing? It might be difficult to code but just a suggestion for improvement if you haven't done it already.

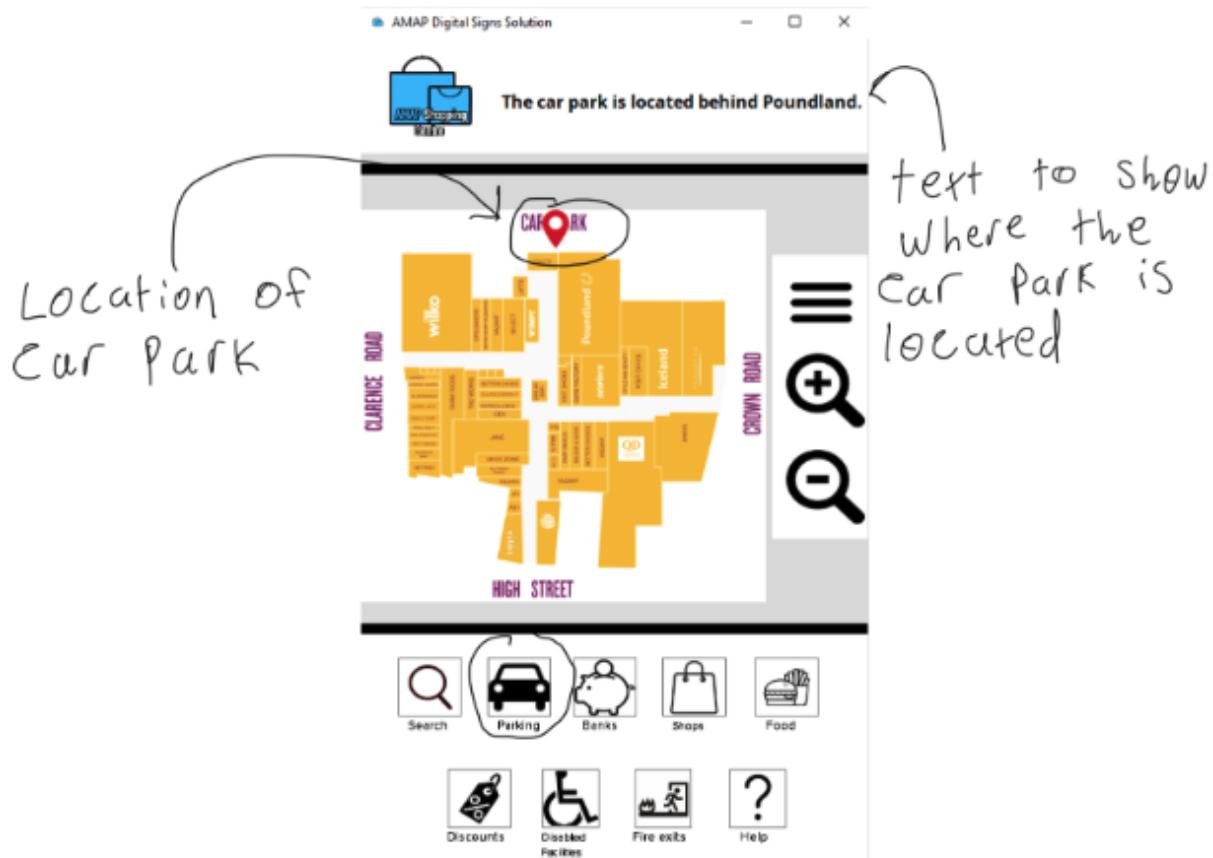
similar to the prior question

The search bar looks good and I like how it gives suggestions. Does it change the recommendations depending on what you search though.

Makes searching easier for customers, however it could be made a bit larger.

The next question I asked was about my search bar. With the first response, this person has responded to improve search results by having the user not have to type the whole thing to get their result. Whilst this is a good suggestion and can improve accessibility and usability, I believe that it is best to not improve this feature. This is because it can go ahead and get confusing if some words are similar to others and can make search results incorrect. With the second suggestion, this is referring to making the search bar more compact, however the search bar does not have enough space and so, is already compact enough. With the third response, the search bar does change recommendations depending on what you search and for the last suggestion, whilst it would be best to increase the size of the search bar, I believe that this does not need to be optimised. This is because the search area is already small enough and there are already search suggestions as well, so the whole thing would be more compact and clustered if I were to increase the size of the search bar.

This is the location of the shopping area parking spot when the user clicks on the parking button.
Please state your opinion on this.



This is the location of the shopping area parking spot when the user clicks on the parking button.
Please state your opinion on this.

4 responses

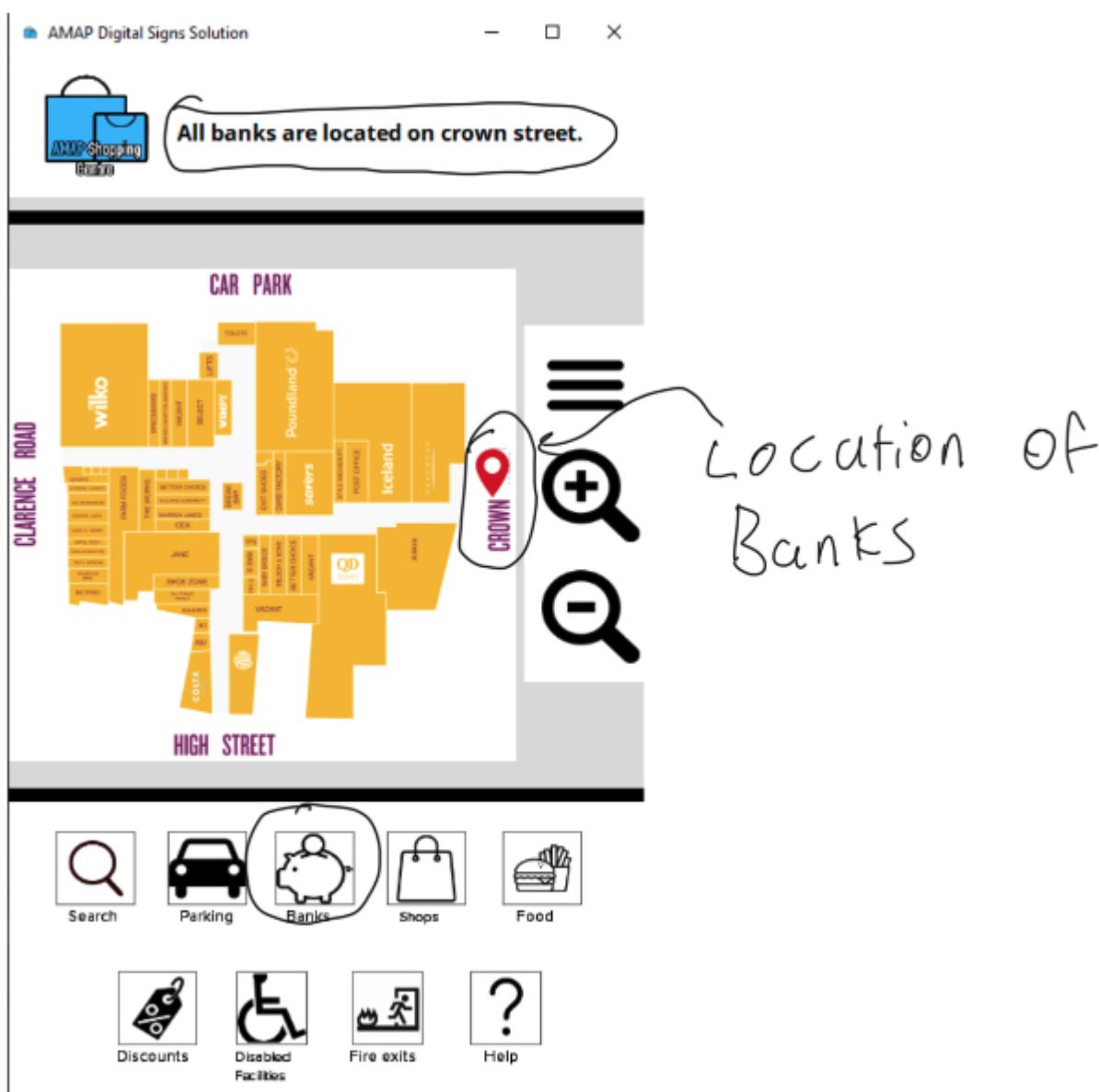
Good labels saying where it is. Could add some information about parking somewhere like the costs or something like that

Elements like this, as for all following questions similar to this, could be displayed through the use of specific graphics added to the map, reducing user input required in order to obtain information as well as simplifying the program

The map functionality looks fine and clearly shows where you're.

Good use of colour for locator icon.

The next few questions ask about the location elements of when the user clicks each specific button to go to a certain area of the shopping area map. With the first question, this is asking about the parking area location shown. With the first suggestion, this is asking to include information such as the cost of parking. Whilst this is a good suggestion, I believe that it should not be included as this is primarily used for users to get to the parking area where they have parked their car, so most users would have already paid for their parking and would just like to get back when using the system. Whilst it would make sense to use specific graphics on the map for reducing user input to see where the location of elements are, this can make elements confusing as they would all be different to users and thus, this will not be changed.



This is the location of banks when the user clicks on the Banks button. Please state your opinion on this.

3 responses

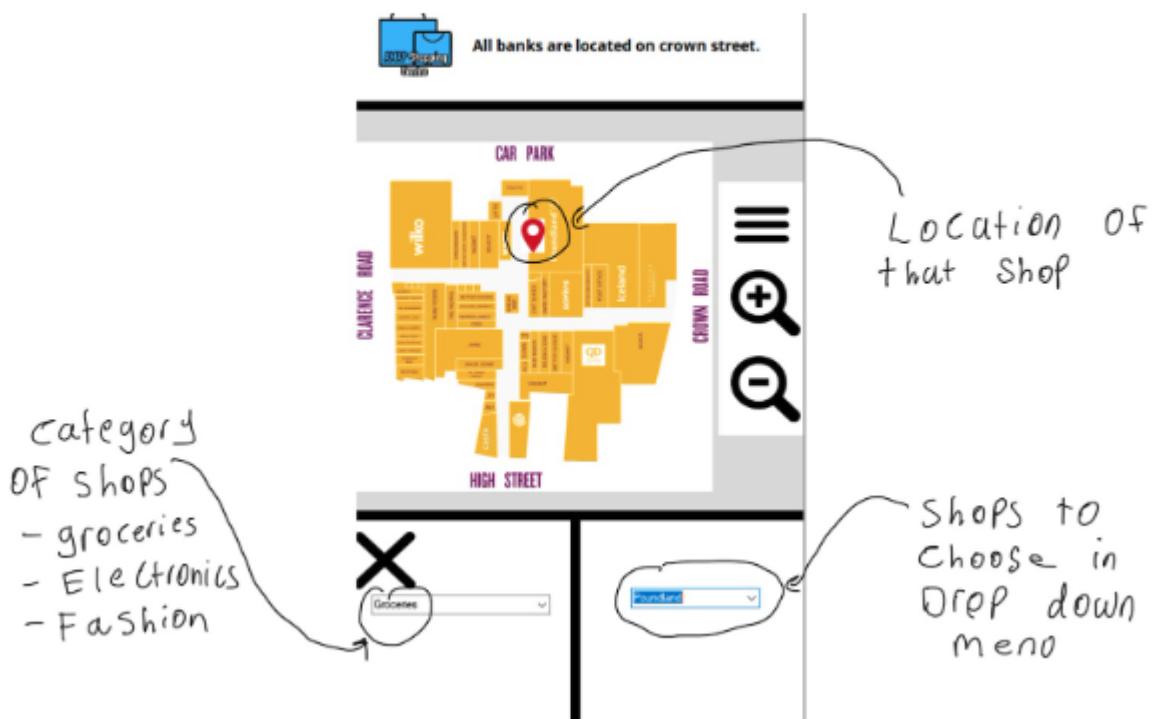
The pinpoint icon is very clear on the map so it can be seen easily

Again the functionality looks fine and clearly shows where the banks are.

Good use of colour for locator icon.

For this question, all of the responses were similar to the previous question.

This is the button for allowing users to search for a shop. A list of categories of shops is presented and then another drop down box is shown to select a shop from that category. Please state your opinion on this.



This is the button for allowing users to search for a shop. A list of categories of shops is presented and then another drop down box is shown to select a shop from that category. Please state your opinion on this.

3 responses

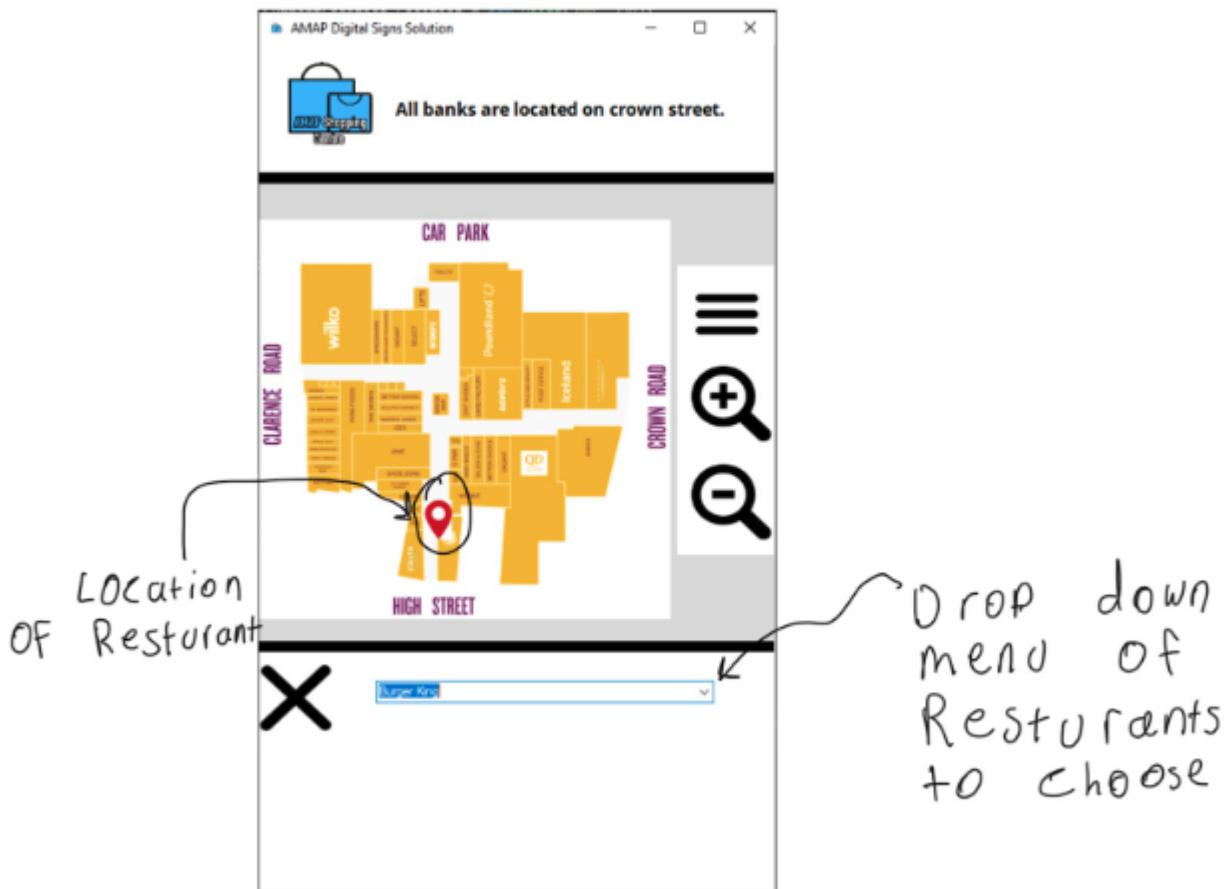
Great concept with drop down menus so the screen is not overwhelmed with too much text but if it were to use text, logos could be shown instead

This is perfect but maybe it should show where the user's current location is so that they can see the path to their desired shop.

Create titles and make the text larger.

With this question, whilst logos could be used for searching a shop, this will not work with drop down menus and can create inconsistencies due to not every shop having a logo, so it is best not to change this. With the second suggestion, I will end up implementing this feature and optimising it so that the user can see their current location. This is because it will make it easier when the user is using the system to see their current location and go to any location after it when they know where in the shopping centre they currently are. With the third suggestion, titles have already been created before a user selects their category inside the drop down box and the text cannot be changed due to the size of the drop down box.

This is the button for allowing users to search a restaurant. A list of restaurants is presented in a drop down menu and once the user selects the restaurant, the location is shown. Please state your opinion on this.



This is the button for allowing users to search a restaurant. A list of restaurants is presented in a drop down menu and once the user selects the restaurant, the location is shown. Please state your opinion on this.

3 responses

As long as the pinpoint position works and it is obvious exactly where the place is, this is a very good screen

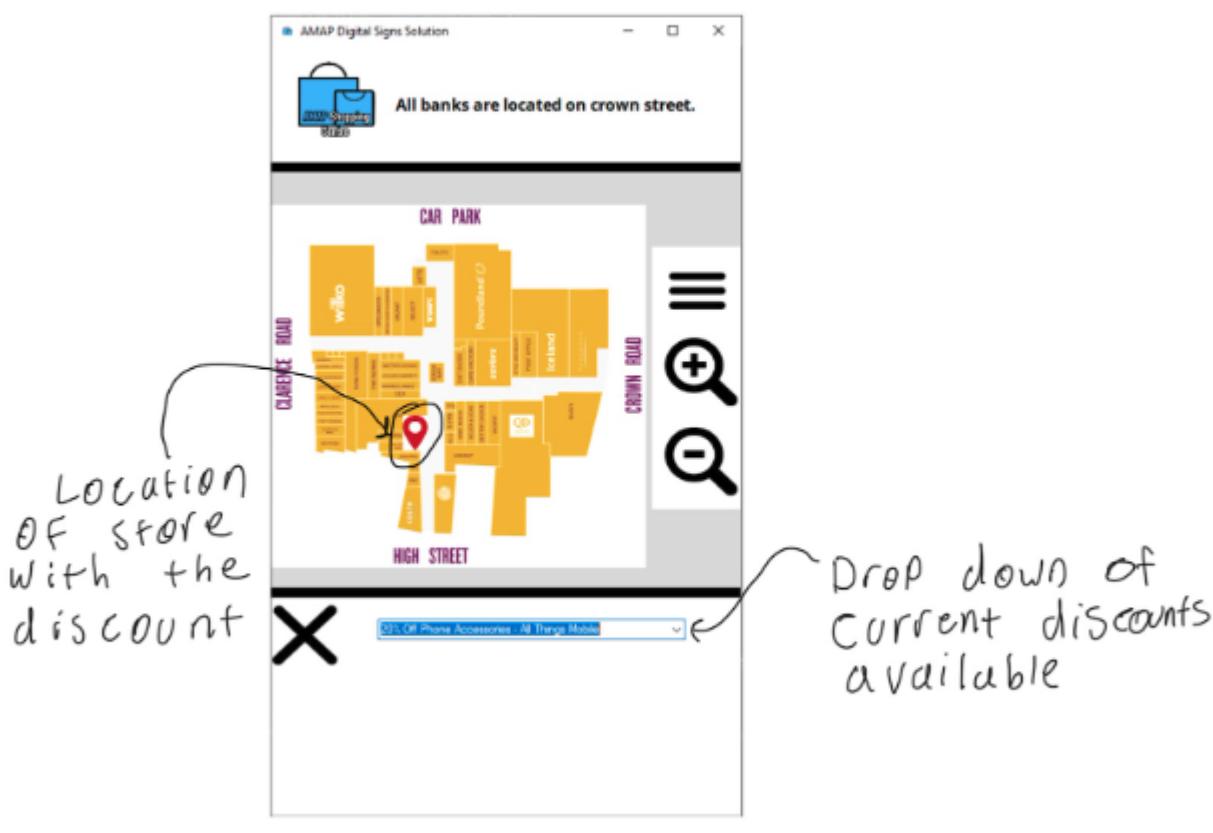
Again this is perfect for locating the user's desired restaurant but maybe it should show where the user's current location is so that they can see the path to their desired restaurant.

Good use of colour for locator icon.

The next question was about the button for allowing users to go to a restaurant. All of the feedback was the same as last time due to the layout being very similar.

...
...

This is a list of discounts available in the shopping area when the user selects the discount option. A list of discounts is shown in the drop down menu and once the user selects it, the location of the shop with the discount is shown. Please state your opinion on this.



This is a list of discounts available in the shopping area when the user selects the discount option. A list of discounts is shown in the drop down menu and once the user selects it, the location of the shop with the discount is shown. Please state your opinion on this.

3 responses

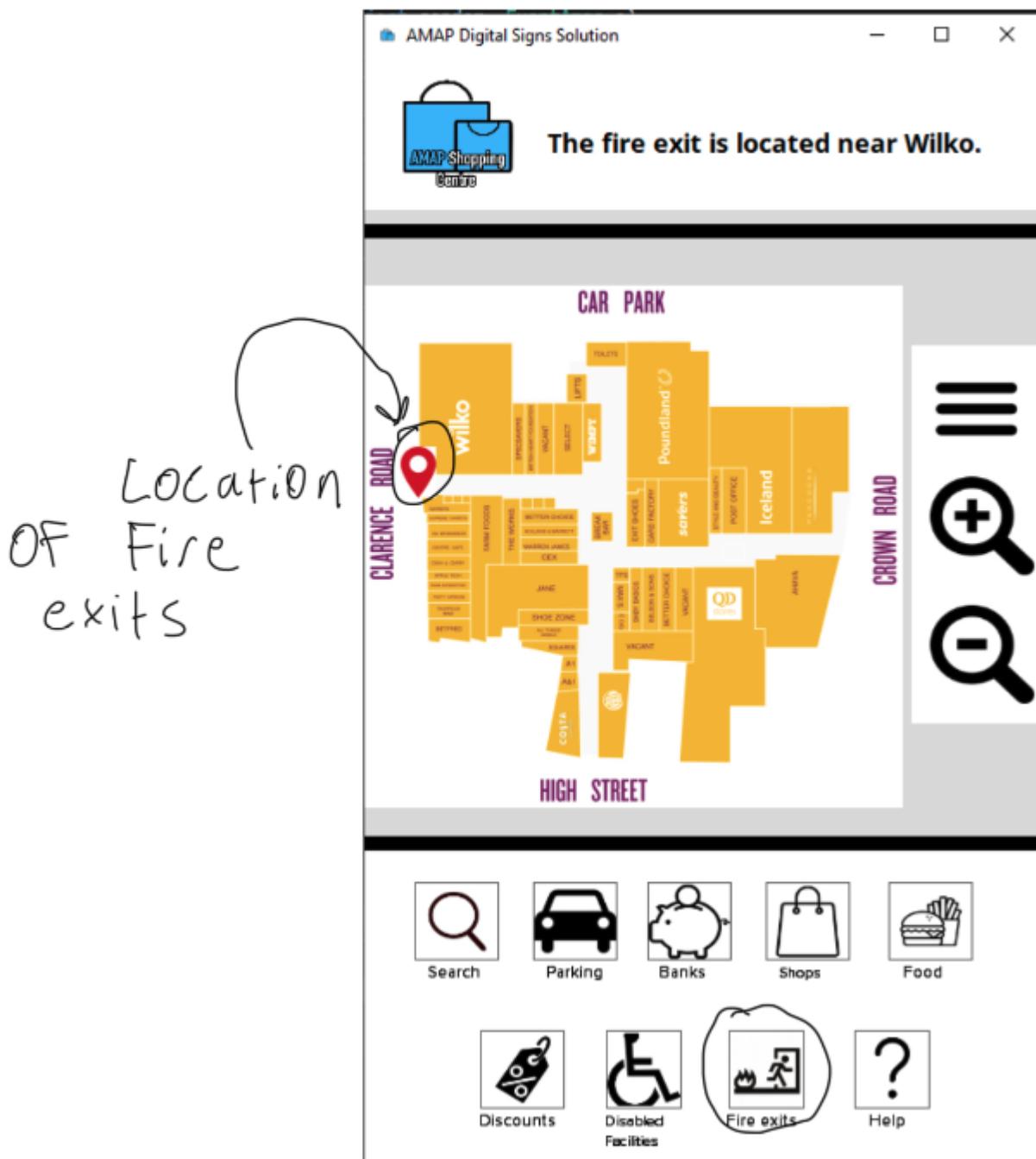
This looks like it could work and I like how it shows the discount and shop location.

Good use of colour for locator icon. Discounts should be larger, and more flashy to attract attention.

Very nice consistency throughout all the screen. Can't see it at the moment but ensure that if the text describing a discount is longer, it can still be read.

With this question, whilst the feedback received was also similar, there were a few things that people have given me feedback for. The first of which is to make discounts larger and flashier. Whilst this could attract attention, I believe that this could clash with the minimalistic style that the system is using and so, can make usability and simplicity a problem. With longer discounts, these can still be read even if the text is longer so this does not need to be optimised.

These are the fire exits shown when the user selects the fire exit button. Please state your opinion on this.



These are the fire exits shown when the user selects the fire exit button. Please state your opinion on this.

3 responses

Same with the disabled faculties, if there were two or more fire exits but still good with the consistency and concept

It's ok, there's very few fire exits but it'll do.

Good use of colour for locator icon.

With this question, the main thing that needs to be improved is including more fire exits, which I will include in the map. This is because in an emergency situation, only having one fire exit may not be ideal and can be a threat to people visiting the site if there is only one way to get out. In addition to this, the user may be far away from the exit and so, more fire exits need to be kept in place, which will be optimised.

This is a panel shown when the user clicks on the help button, which gives instructions on how to use the Map as well as background information on it. Please state your opinion on this.



This is a panel shown when the user clicks on the help button, which gives instructions on how to use the Map as well as background information on it. Please state your opinion on this.

4 responses

Great idea to add this

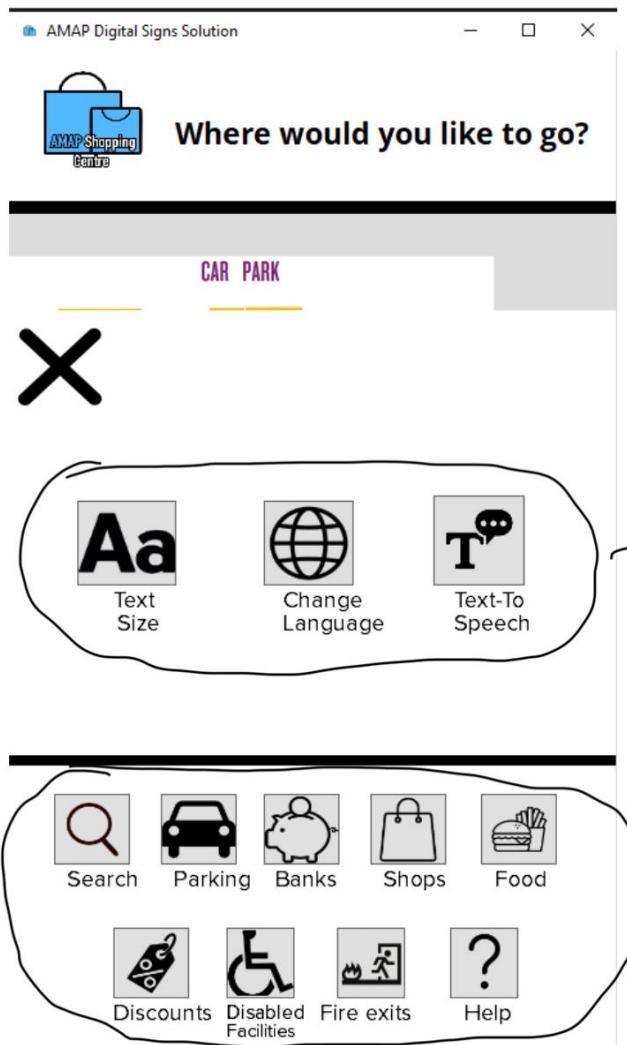
No problems specific to this, instead of maybe alter the colouring to make the text stand out more

This is great accessibility ensuring that user's are able to understand how to use the hci solution. I can't see much of it but as long as all the features are explained then it's fine.

Text must be larger.

This is the final question that I have asked users and is about the help button. With the feedback received, Altering the colour can confuse the users as no other text in the program has been given a different colour, and so the colour of text is inconsistent if it is different. And whilst the text should be larger, as it will be displayed in different languages, it is difficult to change the text for each. In addition to this, the user does have the ability to make the text large through accessibility features if they wish.

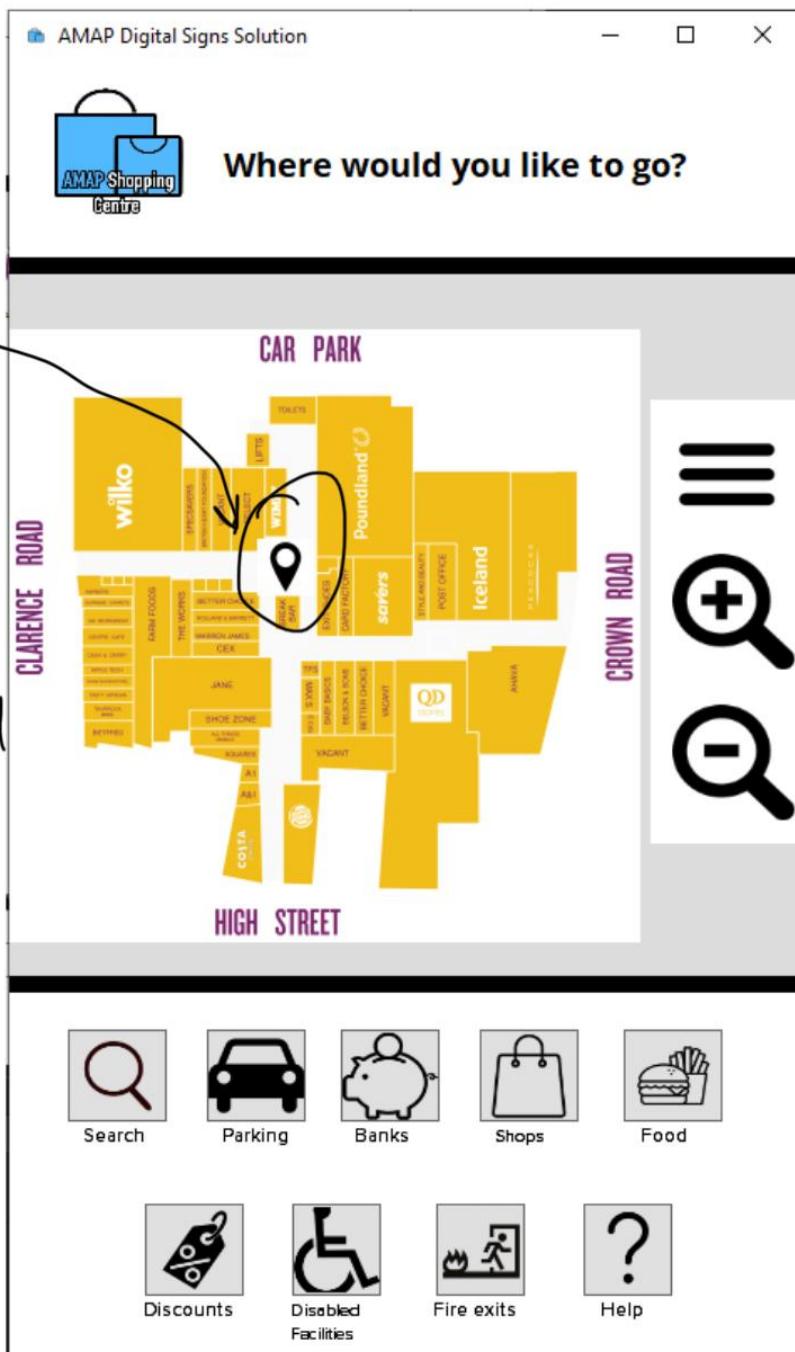
Optimisation of HCI Solution



Button colour has been changed so that it is more readable and stands out

The screenshot shows a digital sign interface for a shopping center. At the top left is the AMAP Shopping Centre logo. The main title is "Where would you like to go?". Below it, a large "CAR PARK" button is visible. A large black "X" is overlaid on the screen. On the left, there's a circular callout containing three icons: "Text Size" (with letters Aa), "Change Language" (globe icon), and "Text-To Speech" (microphone icon). Below this are several other icons: "Search" (magnifying glass), "Parking" (car), "Banks" (piggy bank), "Shops" (shopping bag), "Food" (hamburger), "Discounts" (tag), "Disabled Facilities" (handicap symbol), "Fire exits" (exit sign), and "Help" (question mark). A handwritten note on the right side of the interface reads: "text has been moved when clicking 'Text size' to make it easier to read and not cluttered like before".

Current location has been marked to make navigation easier

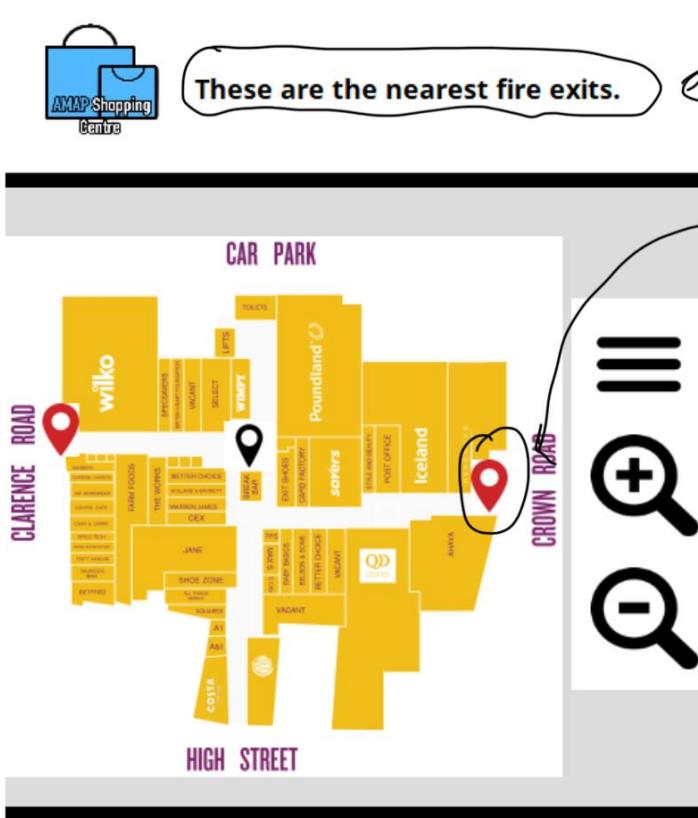


AMAP Digital Signs Solution

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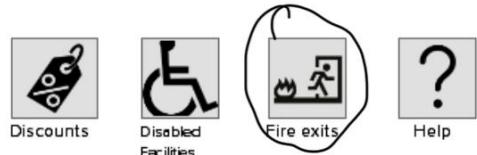
□

×



text has changed
due to more
fire exits.

One more fire
exit has been
added



Evaluation of HCI Design and Solution

Overall I believe that I have created an effective solution that meets user and target requirements set as well as function well and is visually appealing, however there are some things that are not as good about my solution as well.

One of the advantages of the solution I have implemented and designed is that I have included a wide range of languages for the user to choose from. This is because it makes the solution more accessible towards users with language barriers and helps them use the system. Almost everything has been fully translated into 6 different languages and allows for users with language barriers to use the system. In addition to this, the languages I have chosen are all languages that most users speak and so, these were all good to include within my solution. This helps meet user requirements by allowing more users that may have language barriers to use the solution.

Another advantage to the design and implementation of my solution is that it has been designed specifically for the use of a touchscreen device. This is because in a shopping centre, this system will be implemented as a kiosk and so users will be using their hands to interact with the system. The way the system has been designed to meet this is that the kiosk system itself is in portrait instead of a landscape display, making it easier for users to use their hands to interact with the system. In addition to this, the buttons I have included are all buttons that are similarly designed to a mobile phone touchscreen device. This makes it easier for users to use the system as they are already familiar enough with using a touchscreen device on their phone, so the system can be easy for them to use. This helps meet user requirements and makes the system easy to use and intuitive.

Another benefit of the system that I have included is that there are also a wide variety of accessibility options that I have included. The accessibility options that I have included are being able to change the text size, use text to speech, include disabled facilities available, change the language and zoom in and out of the screen. This allows users that may have certain disabilities to use the system with ease. In addition to this, a help button is also available so that users that may not be familiar with technology can get help on how to use the system. This meets users requirements as users with disabilities can use the system with ease and these options can also help users to customise their experience when using the system.

In addition to this, another advantage of the system is that the system uses consistency throughout the menus so that the system is easy to use, intuitive as well as clearly showing a consistent navigation. This is an advantage because it makes the system easy to use for anyone and includes a lot of clarity so

that users know where they are going and what they are doing. The style, colour scheme and size of icons and text are consistent throughout the program and everything has been designed to make the system be as easy to use as possible, meeting user requirements by making the system user friendly. In addition to this, image feedback has also been provided by including icons as well as text to explain what each button does, and everything has been laid out to make it easy to use the system and see where all the buttons for the system are located.

As for the limitations of my solution, one of the weaknesses of the solution is that there is a lack of colour in the program. This is because all of the colours used are dark and standard colours such as grey, black and white. Whilst this does give the program a minimalistic look, it can be quite plain and boring and this could potentially make it hard to use the program for some users due to elements looking too similar to others. In order to improve this to meet user requirements, a few more colourful colours could be used for some elements of the system such as brighter colours for buttons or to split specific areas of the shopping centre off.

Another limitation of my solution is that the zooming in feature is not very accurate and can be difficult to use for some users. This is because there is only one zoom and it only makes the map bigger and not the program. This can be difficult to use for some users because they may not be able to find a certain shop or they may need to zoom in more to use the system. In order to improve this, a slider could be included so that the user can choose how much zoom they would like and the form's size is changed instead of the map so that the zoom in feature works better.

Another limitation of the solution is that when the user selects a category when clicking the shopping button, there are only 3 categories that the user can choose from. This is because there are only a few shops in the centre and most of them don't fit specific categories. This can make searching for the location of a shop difficult for a user as they may not be able to find it or it would get mixed in with another category, making users confused and making the system difficult to use. In order to improve this, more shops could have been added as well as more categories so that searching is easier.

Overall the system I have designed and developed has many different advantages and disadvantages, but has met client requirements and has been designed and developed effectively to meet the needs of users and make using the system easy and intuitive.

Demonstrate individual responsibility, creativity and effective self-management

Task	Date Started	Date Completed
Introduction	09/05/2023	09/05/2023
Design of HCI Solution	09/05/2023	16/05/2023
Review of HCI Solution Design	19/05/2023	21/05/2023
HCI Solution	19/05/2023	31/05/2023
Review of HCI Solution	31/05/2023	01/06/2023
Optimisation of HCI Solution	01/06/2023	01/06/2023
Evaluation of HCI Design and Solution	01/06/2023	01/06/2023
Demonstrate Individual responsibility, creativity and effective self-management	02/06/2023	02/06/2023

Overall I have done a good job at demonstrating individual responsibility, creativity as well as effectively self managing my time, communicating with clients and meeting all of the requirements that are needed.

With the introduction and design of my HCI solution, the advantage of the way that I have managed my time is that I was able to complete the introduction and start designing on the first day of the project. This has helped me kick start and work my way up to complete the rest of the tasks of the project. With the disadvantage of this however, I wish to have finished the design much earlier. This was because I had taken a few days off prior and had not worked much on the designing stage, so since I had spent a lot of days on this stage of the project, I could have finished this a lot earlier and saved myself some time.

When it comes to the review of the HCI solution however. The advantage of this is that I was able to quickly obtain feedback from people to help improve my solution. This has helped me to make adjustments to the review quickly by obtaining this feedback from 4 people. In addition to this, I had also effectively communicated with people regarding feedback in a professional manner by sending a

feedback form via email as well as giving instructions and clear information about my plan to the user so that effective and honest feedback can be provided. This helps to make sure that the feedback I had received was genuine and that people knew what I was asking feedback for. I had also sent the form to multiple people and closed the form once I got enough feedback that I needed. Whilst this may be a bit unprofessional, it does mean that I was able to quickly obtain feedback by making sure that some users are able to quickly complete the form and others not. As for another limitation however, one limitation is that I had made the feedback form too long for people. This may have made some of the responses a lot less genuine and could have made it easier for these members of the team.

With implementing and creating the HCI solution, unfortunately I had spent too much time on this part of the project. Whilst this is the most time consuming part of the project, I had to restart the project 3 times due to problems occurring with the file. This has been quite unprofessional and has taken up a lot of the time, causing me to lose time and restart. This could have been prevented if I had properly known how to create the solution as well as how the program works. In addition to this, I had also not met the initial deadline for this part of the project that I had set. The plan was to finish the solution on the 28th, however I had finished it on the 31st. This means that I had not met my deadline which has caused me to complete the other parts of the project closer to the deadline date.

After completing the design, I had once again sent the feedback form to a lot of people and closed feedback once I got the responses I wanted. This may be a bit unprofessional however I was able to quickly obtain feedback from people especially so close to the deadline day. This had also allowed me to optimise the content in one day as well as complete the evaluation of the project a day before the deadline. This has allowed me to be more productive these days and quickly complete the project.

With the self evaluation, this has been completed the day that the project is due. Whilst I could have improved and saved a lot of time with the project by completing a lot more of it earlier on, as well as met deadlines better, I was still able to finish the project early and did a decent job with meeting my deadlines and completing the project. In addition to this, I had also effectively communicated with team members and used methods to quickly obtain feedback from them.

References

Bibliography