



12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

FORENAME(S): Ben

1	Student Number	P124549
2	Title of Examination Paper	Usability Engineering
3	Module Code	M6X01110
4	Date and Time of Examination	18/05/18
5	Examination Venue	Townhill
6	Seat Number	6045
7	Number of Answer Books handed in	

List the numbers of the questions you have attempted	Office Use
1	17 17
3	15 15
4	14 14
Office Use	46 / 75

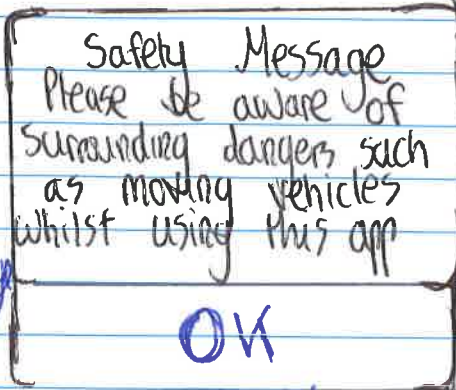
(Gweler yr ochr arall am y fersiwn Cymraeg)

61%

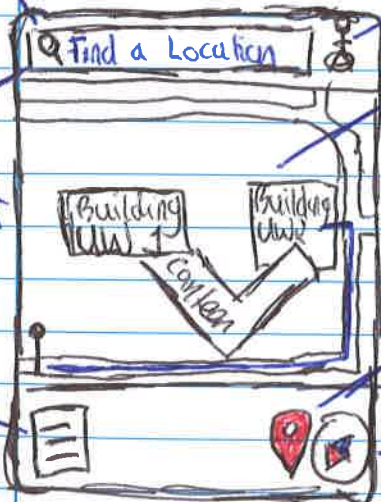
The example is a Mobile application it is a campus Map to help students get from place to place on campus



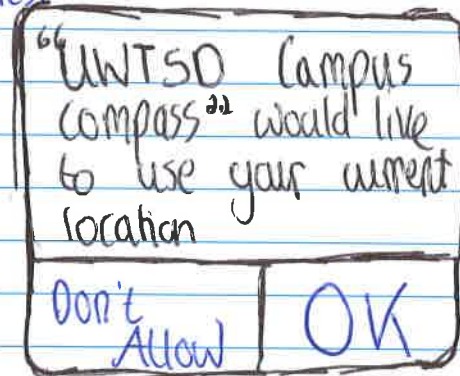
App Thumbnail



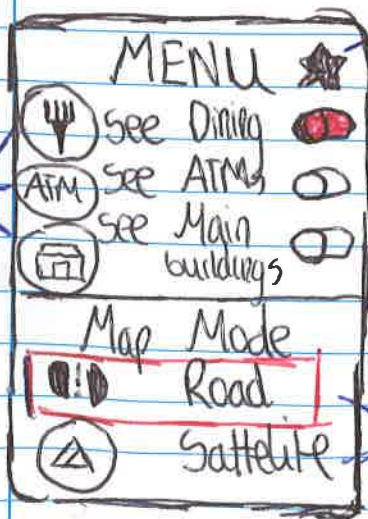
Safety message upon opening the App



Main Page - map interface



App asking permission to use location comes up as a result of clicking location icon on main page

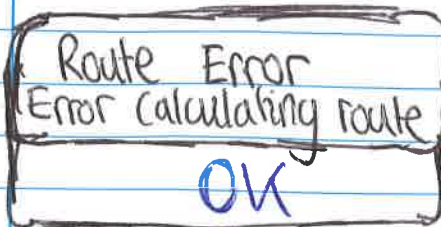


Saved routes / locations stored here

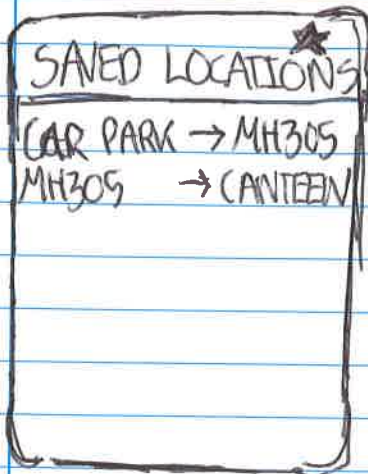
Switch buttons to make these visible on the map - Switch is red when on

change the map type from road to Satellite - whatever is chosen is red

QNE a)

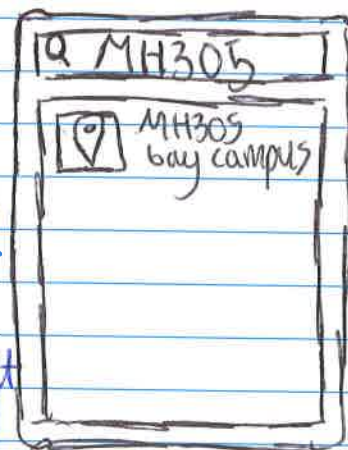


- Error message received when map can't find the users route



- clicking the saved locations/routes star (★) on the 'MAIN PAGE' takes you here. The app allows users to save routes

search bar drop down from 'MAIN PAGE' user has searched 'MH305' The app will route the user from their current location to the searched location



QNE a)

When designing the app, there were a number of usability techniques considered. These mainly being the Human Factors involved with a focus on visual perception (affordance colour spatial positioning, shapes) 'The Human memory' and the use of interface metaphors and affordances

Colour has been used as an organiser of information and to draw the users attention to something. With red highlighting what map mode is currently being used and a blue line marking out the route. Also the colour of these trigger the human sensory memory, triggering

"preattentive processing" drawing the eye to the information visualised.

Also George A Miller reported humans can store between 5 and 9 similar items calling it the "magic number 7". Sticking with this theory there is no more than 7 elements per page at a time making the app easier for the short term memory.

The use of interface metaphors are used throughout the design of the app. The fork to show the app will be displaying places to eat, a magnifying glass to show a search for something, location icon to choose current location. These are all standardised well known interface metaphors making the app easier to use, easily recognisable for the end user and easing awkwardness upon use. It wouldn't take long to master. These tie in with affordances, affordance is clues about how an object should be used. For example in the app the switch buttons we know they need to be switched on or off to do something.

Conclusions

The app is very easy to use, easy to remember, efficient and visually pleasing. However applying Miller's "Magic seven" theory may be a hinderance for bigger campus's that need to display more information. A good suggestion to overcome this would be to split this information up further to more pages or show information using other multimedia.

Also the use of red may not be suitable for everyone. Colourblind users for example would struggle.

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a

Good designs & specific examples gives.

ONE 6)

The process of development was:

1. The initial idea, identify what problem the app will solve
 2. Discover target audience, develop the app with these in mind. This is done through personas - description of users
 3. Create a hierarchy of task analysis
 4. Paper designs
 5. Testing initial 'paper designs'
 6. Make needed changes to paper designs
 7. Create prototype
 8. Testing, feedback, updating
- (3.5) Pick a platform to be supported

The above design fits into an appropriate usability project lifecycle because a normal cycle is the requirements analysis which are stages 3/4/5 of the app process which is a description of users, platform capabilities. The next step is design + testing which is 4/5/6 in the app project life cycle which involves the initial designs - followed by installation + feedback which is 7/8 of the app lifecycle involving gathering feedback from real life users discovering what the user dislike.

Good, brief explanation of strategy

- ONE c) The benefits of the usability techniques are that you can define the target market early so you can make the app around the right target audience saving both time and money. The design stages on paper are important so any major errors + changes can be made whilst

on paper again saving money. It is important to gain feedback if users to change what is wrong, keeping the target audience happy.

3 Good justification

3 3A) Application of Schneidman's 8 golden rules

1. Strive for consistency (layout, terminology)

The app uses familiar icons and users are familiar with such as ☰ for main menu and ⊗ to close a box. Text font is the same throughout.

Offer simple error handling / Provide instruction to recover

The app provides a simple 'Route Error' message, it appears when the app can't calculate your route saying "Error calculating route" offering the end user to go back. It is clear & easy to understand, with no code in plain text.

Offer informative feedback

The app provides feedback when it opens it opens with a message asking the user to be aware of their surrounding such as moving vehicles when using the app.

Design Dialog to Yield Closure

The app easily flows from task to task when the end user opts to switch on ARM switch - the switch button turns on and also changes to red - the end user is fully aware they have completed a task.

- Reduce short-term memory load
- The app has been designed to be as simple as possible, in line with Miller's 'magic seven' so to not overload the end user's short term memory

- Support internal locus of control
- The end users are in control at all times. From choosing the routes they would like to have to turning on information on the map interface such as places to eat etc.

These guidelines are both practical and easy to follow. They lay the foundations for the design of a good app and can be linked with accessibility guidelines keeping the end user in mind at all times of the design process

Some good examples

36) Accessibility

Recommendations for accessibility are:

- Not relying on colour so much like red to visualise information, instead of changing to red the icons could underline or get bigger or go bolder or the lines could get thicker.
- Offering a different choice of interface - so if multiple versions existed for say desktop for a wheelchair user give the user the option to change to an interface that suits them and save these settings for next time.
- Enable automatic sign in - especially important for mobile apps where entering details is harder.
- To avoid seizures the app would not display any components that flash.
- All settings can be saved, set back to default and transferred between devices.
- Design for multiple interaction methods - based on touch now however could consider be controlled by voice command.

These Accessibility general guidelines go hand in hand with general usability guidelines because they tend to make the whole experience better for everyone not just users with disabilities.

making apps easier + faster for everybody.

36) continued

- Text should be able to be resized by up to 200% for users that have difficulties seeing, this could also be coupled with the ability to resize icons, the search bar etc.
- Present direct commands from rendered content which means the user can have any recognized direct commands in rendered content for example - hover over the spacebar for 9 seconds to take you to the map hover over the 's' to start a search for a building or route.

to practical advice on accessibility features.

8

8

(15)

4a
4a) Maps

There are difficulties in developing map based interfaces because testing is too general. Some issues encountered are:

Visibility of contextual map functions

- The limited display size of the mobile device causes challenges for both setting map functions and making important map locations visible

User Control over map functions

- Whilst observing in class, a classmate had a phonecall during the study of them using a map which disturbed the app. When this occurs the app should be able to save its current state and still be able to give the needed navigation

Consistency and standards

- Symbols for mobile maps are designed for small screen size in which it is essential to consider clarity, intuitiveness + map symbol convention. Not all maps tested when watching a peer use a map used the same standards + symbols so use was confusing at first. For example different apps use a different symbol for your current location

Error Prevention

- rigorous testing should be done to ~~prevent~~ prevent errors

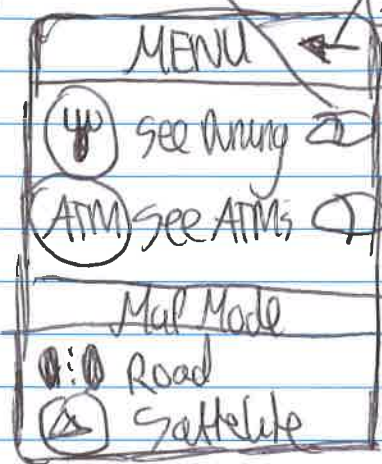
- 4) Recognition rather than recall
 - to avoid overloading the short term memory either stick to Miller's ⁶⁶ Magic 7th or start offloading using many different multimedia to present data as well as giving the user clues about how they can select and organize data.

Good outline of issues.

- 4b) Sketch of suitable map



industry standard location symbol



option to switch things on/off map

back button

well known main menu icon

Night mode option meaning no calls will come through

Overcoming the design challenges

Using symbols and icons that end users are familiar with and that are standardized makes the app easier to use and easy to master for new users. Having the sleep mode for the rest of your phone on whilst this app is being used ensures it will not be disturbed by phone calls, texts, e-mails etc.

Having the option to turn things on and off on the map interface helps with the visibility of the overall map itself + it's functions. It is difficult not to overload the short-term memory but if I had more time I would I

split the processes + pages up further. This
would be useful for app needing to convey a
lot of information.

Some good map usability points

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