HUMAN COMPUTER INTERACTIION

HCI Mini Project

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Article I. Contents

Article II. Introduction

This report explores techniques used to develop the Eleven Plus application for the HCI Mini Project. The scientific field of Human Computer Interaction emerged from the personal computing market and the formation of cognitive engineering in the late 1970s.

Over the decades, this field has expanded to encompass disciplines and concepts from an increasing network of professionals, many of which operated outside of the Computer Science sphere including psychology, linguistics and philosophy (Carroll, 2013).

The advent of personal computing created an urgent need to understand how design can complement human behaviour and result in improved user experiences. In the digital age, HCI has become an integral part of everyday life where effectively designing for user experience is driven through our increasing dependence on automated technologies. HCI principles are found in device designs ranging from remote controls to car wash operating panels (Carroll, 2013).

Article III. Concepts & Design

The design of the application needed to include a number of HCI design principles to enhance its usability. The ISO 9241 standard *"Ergonomic Requirements for Office Work with Visual Display Terminals*" provides a definition of usability:

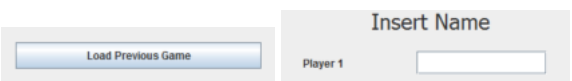
"Usability – The effectiveness, efficiency and satisfaction with which the specified users achieve specified goals in particular environments"

This definition asks the developer to consider how the end product will enable the target user group to achieve their goals within their environment.

(a) Target User Group

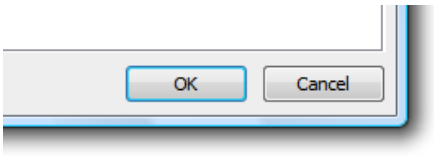
The application is aimed at an aged 11 to 12 years user group. Whilst it could be argued that this user group is already very experienced and familiar with many different user interfaces, the application should be designed with simplicity in mind. This is because it is perhaps more likely that this user group may have had greater exposure to touch screen type interfaces, game controllers and TV remotes than the use a traditional mouse and keyboard.

For this reason, the interface is designed using traditional operating system style buttons (common MS Windows style) provided through the Java Swing library.



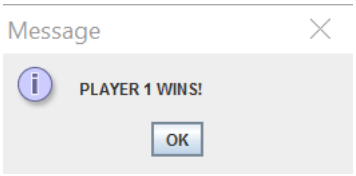
Furthermore, the location of interactive objects, such as buttons and input boxes, have been placed intuitively with labels describing their function. The use of clear space helps to separate and define the separate sections of the interface.

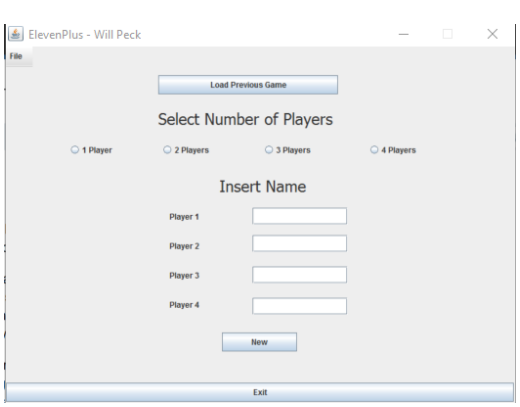
Familiarity of the interface design is an important consideration. This is illustrated by the image below where the OK and Cancel buttons are reversed. Many user interactions become automatic and therefore should be understood as part of the design process. Being presented with this message box would inadvertently cause repeated user error due to the imprinted behaviour of clicking OK as the furthest right hand button.

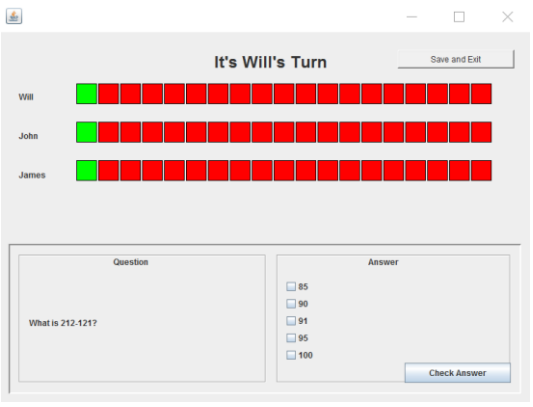


(West, 2009)

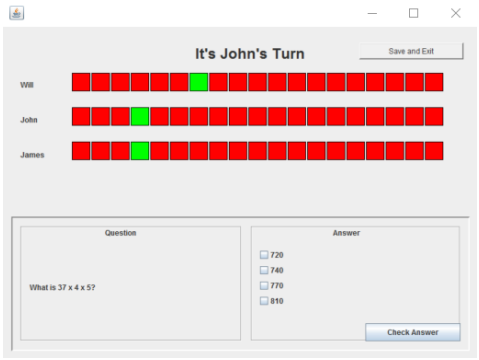
Message boxes are used in the design of the application to inform the user group of the winner. This again follows the familiarity principles by replicating similar message boxes and using the "OK" button label.







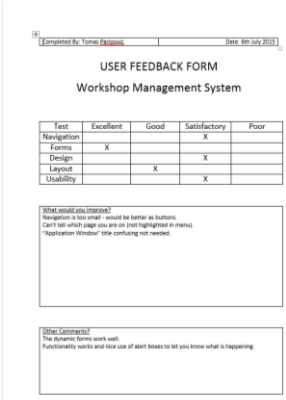
The use of colour helps the user identify their progress throughout the game. A future enhancement would be to add an identity to the winning squares by highlighting them with a different colour. The orientation of the game progress is also deliberate to follow familiarity with progress bars and the graphs where values generally increase from left to right. Should the game be transversly orientated the user might describe progress as moving backwards.



Article IV. Testing

To test the application; the user group could be observed during interaction with the program. During the observation, attention should be paid to any usability problems such as user errors triggered by the design.

Surveys targeted at the user group would also be an effective way to gather feedback surrounding the usability of the application. For example:



USER FEEDBACK FORM

Workshop Management System

Test	Excellent	Good	Satisfactory	Poor
Navigation			X	
Forms	X			
Design			X	
Layout		X		
Usability			X	

The System Usability Scale
Standard Version

		Strongly disagree				Strongly agree
		1	2	3	4	5
1	I think that I would like to use this system.	O	O	O	O	O
2	I found the system unnecessarily complex.	O	O	O	O	O
3	I thought the system was easy to use.	O	O	O	O	O
4	I think that I would need the support of a technical person to be able to use this system.	O	O	O	O	O
5	I found the various functions in the system were well integrated.	O	O	O	O	O
6	I thought there was too much inconsistency in this system.	O	O	O	O	O
7	I would imagine that most people would learn to use this system very quickly.	O	O	O	O	O
8	I found the system very cumbersome to use.	O	O	O	O	O
9	I felt very confident using the system.	O	O	O	O	O
10	I needed to learn a lot of things before I could get going with this system.	O	O	O	O	O

(Law, 2015)

Article V. Bibliography

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