Ryan Bodzioch

S3951227

<https://github.com/RyanBodzioch/ITITAssignment1.git>

<https://ryanbodzioch.github.io/ITITAssignment1/>

Personal Information

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Nationality: Australian

Prefered Language: English

Education: Completed Year 11, Certificate 3 in Automotive Mechanics

Hobbies: Spending time with family, Gaming, Lego

Hi my name is Ryan Bodzioch. I live in regional South Australia. I was born in Adelaide, South Australia and I have lived there my whole life. I speak English and despite my Father’s background being Polish, I have never learnt another language. I completed a Certificate 3 in Automotive Mechanics after I completed year 11 at school. After working in mechanics for a few years, I moved into Transport and Logistics. I was working as a Warehouse Supervisor when I injured my back. Since my injury 3 years ago I have not been able to undertake employment. This presented me with the opportunity to start studying to begin my career in IT. My family relocated 12 months ago; I am now lliving in the rural township of Nelshaby, located approximately 2.5 hours north of Adelaide. On our property we have 2 dogs, 3 cats and a goat named Vicki (after the old Victor lawnmowers).

Interest in IT

My interest in IT started when I was young watching a family friend fix my father’s computer. I was fascinated while watching him pull apart and put together our old desktop, installing hardware and software, and general diagnostics with the operating system in the mid to late 90’s. I have always been an avid gamer but never got into the inner workings of IT until later in life. Once I started diagnosing simple problems with my laptop a few years ago I started to feel a spark of passion. I thrive on problem solving and the feeling of gratification after finding the solution to something that may have been bothering me for hours.

Due to my work related injury I wasn’t able to continue my career in Warehousing and Logistics. I began a Diploma in Information Technology 2 years ago, but the timing didn’t work out due to other family priorities. I now have the chance to focus on my IT studies, which lead me to begin my undergraduate degree. I chose to come to RMIT after an internet search to find a university that offered the course online. Due to my regional location, it wasn’t feasible for me to study face to face.

During my studies with RMIT I expect to learn how to understand coding language and programming, how to dismantle viruses and malicious threats. I am interested to know and understand the components of computer hardware, the systems and processes of computer functions and software engineering.

Ideal Job

<https://www.seek.com.au/job/56149015?type=standout#sol=11f1edb7afc7daab883e1aa2c563db1cd8e700ff>

This job as a cyber security analyst involves watching over networks of any malicious activity towards personal and clients’ networks. This position is appealing to me because of my interest in problem solving. A major element to this role that captured my attention is the option to work remotely due to living in regional South Australia.

I will need the skills of programming and knowledge of the cyber security world. The advertisement suggests certain security certifications are highly desirable, therefore I would need to have the relevant certification (i.e. CISSP, GCIA, GCIH, CHFI, OSCP). There is no mention of a specific level of higher education attainment, but I would assume a minimum of a Diploma in Cyber Security would be required, though an undergraduate or master’s degree in cyber security would enhance employability. There would need to be a level of hands-on experience with SIEM systems so an internship could be an option to gain the experience necessary to be considered for this position.

I am at the beginning of my career in IT, so I have no current experience or skills in Cyber Security. I have a Certificate 3 in Automotive Mechanics in which I have gained experience in the mechanical workings of car systems, which I can transfer to computer systems. I have a large amount of experience working in a team and communicating with clients through my career in Transport and Logistics, particularly in my previous role as a Warehouse Supervisor. This role required me to connect with our customers and organise deliveries in and out of the warehouse, including meeting strict deadlines and stock control.

The first step in my plan for obtaining the skills, qualifications and experience required for this position is to complete my Bachelor in Information Technology. I will choose to minor in Cyber Security, then work towards obtaining the mentioned certifications. Throughout this time, I will be learning the various coding languages and seek out any internships that may be available to enhance my skills and experience in various security systems.

Text

Description automatically generated

Personal Profile

Graphical user interface, application

Description automatically generated

The first test I completed was the Myer-Briggs test from 16personalities (2022). My result was a Turbulent Mediator personality. The results from this test show me that I am an empathetic person in touch with my emotions. It confirms that I am an active listener and enjoy harmonious relationships with others. I find it easy to have a good relationship with most people, which this test has reaffirmed. I always had the idea that I was introverted, and this test has supported my perspective. Being introverted can be challenging when beginning to work in a group situation as I can feel anxious when having to put myself out there. This is something that I have worked with my whole life, and I would like to say I am getting more confident in pushing past my comfort zone.

Diagram, text, letter

Description automatically generated

The second test I completed was my learning style through Matrix Education (2022). This identified I have a Physical Learning Style. I have always found attending to study challenging so I was not surprised to have this as my result. The implications for my learning style in this course are that the mode of online learning can disrupt those physical strategies. When forming a group, I will need to consider the ways in which we communicate and share information. Due to my learning style, I would benefit from online communication using software such as Microsoft Teams using the video option, rather than just sending emails back and forth.

Chart, bar chart

Description automatically generated

The third test I completed was the Big Five Personality Test (Truity 2022). This test measures five dimensions of personality. The results indicated I am creative, adventurous, and intellectual, whilst also empathetic toward others. The test revealed I can exercise self-discipline but will also engage in instant gratification at times. This test reaffirmed my introverted tendencies and identified I have a mid-range level of neuroticism. In conclusion, this personality test has identified I will need to go outside of my comfort zone to approach others to form a group. I will need to find the confidence to ensure my voice is heard as I tend to be agreeable to others. I will also ensure that I have opportunities to engage in physical learning strategies.

Project Idea

Overview

Through my experiences in IT thus far, I have noticed the vast majority of symbols used in coding require a shift command to activate them, such as ‘shift-6’ to make ‘^’, and ‘shift-`’ to initiate ‘~’. To avoid this, I would like to have a keyboard where the numeric keypad can assign different shortcuts for symbols.

The project idea I have formulated is to incorporate an LCD screen beneath the numeric keypad with clear, plastic windows. The numeric keypad will be customisable and allow users to assign different keys whilst seeing what the input is. Through my research I have found that there has been a concept very similar to my idea called the Optimus Popularis (Art Lebedev Studio 2011). It has an LCD screen as the base of the keyboard and clear keys so the user can see through the keys of what the input will be. Due to that I have changed my idea to a macro pad of a similar design that can be plugged into the computer on a smaller scale for shortcuts and an interchangeable keyboard.

Motivation

I noticed while completing learning activities on Github, I was going to the shift key and wanted something easier to activate these keys. I feel that this macro pad could make coding easier and more efficient by reducing or eradicating the need to constantly press the shift key to activate some codes. There are specific apps likes SharpKeys that can assign certain keys to a keyboard (Mishra 2022); however, it does not physically show what you are typing on the key itself. There are 153, 700 people in Australia that use coding in their employment (Department of Education, Skills and Employment [DESE], 2021), and this hardware could help by assigning specific keys to a macro pad that they can customise how they choose. This will make coding quicker and easier, whilst also providing the user the ability to see which symbols they have assigned to the macro pad.

<https://joboutlook.gov.au/occupations/software-and-applications-programmers?occupationCode=2613>

Description

The LCD macro pad will have an LCD screen as the base with a clear window which will be able to change symbols and layouts to meet the user’s needs. It will need to be as slim as possible to avoid bulkiness in the macro pad. The screen will be based on a computer monitor screen with liquid crystal pressed between two sheets of glass. The display will be backlit with the processor and majority of the circuitry housed inside the LCD screen casing.

There will be a keypad case over the LCD screen made from plastic which can be interchanged with other keypad cases to allow different variations of the keys and clip in and out of the LCD case. This will allow easy customisations of different combinations or arrays (example 3x3 or 4x4). There will be two parts of the case with the underside and overside both being in a grid pattern with a thick border with square cavities for the keys to be placed. At the underside of the case, there will be a plug that will seamlessly connect into the lower part of the LCD screen. The circuitry of the keypad will run on the outer edges of the underside case rather than underneath the keys allowing the keys to be transparent. The overside of the case will clip into the underside over the keys to hold them in place.

The keys on the macro pad will be constructed from a transparent plastic with a black border that will be able to show what is displaying on the LCD screen. There will be two copper prongs on the outer edges of the key and the circuitry will run around the black border. This allows no circuitry to pass through the transparent plastic which would obstruct the user’s view. This will open and close the circuit on the lower keypad case. On each corner of the key under the black border there will be four stabilisers with rubber springs. The rubber spring will be housed inside the underside keypad case to allow the key to remain raised when not engaged. The black border of the key will be pushed up against the overside of the case providing distinction of each key by touch.

The LCD macro pad will be able to connect to desktop or laptop via USB cable. As this macro pad will have an inbuilt LCD screen it will need to have an adapter to power the LCD screen. The USB cable and the power cable will be connected at the top of the LCD screen.

To be able to input the desired key to the macro pad, there will need to be an app installed on the desktop. There will be a simple design where the user can change the format of the variations of the keypad by toggling to the arrangement they are wanting to use. This will then show a diagram of the layout (e.g. 3x3, 4x4 etc). The user will use the diagram of the macro pad layout on the app to choose the key they are assigning a symbol to. Once the symbol has been assigned, it will be displayed in that same position on the macro pad. This will allow the user to use the assigned symbol on the macro pad without having to use the shift command. The user will be able to save multiple layout configurations within the application, enabling them to change between arrangements depending on what they are working on. The application will have the potential to save lines of code that the user regularly uses. The diagram on the application will be sent to the LCD screen, which will show what has been assigned to the keys on the macro pad.

Tools and Technologies

The keys on the macro pad will need a 3D printer to be able to process a functional part. An LCD screen would need to be sourced that will fit the macro pad without being too thick. The electrical components will need to be sources (circuitry diodes, processer etc) and will need to be soldered using a soldering iron. A USB cable will be required to connect the macro pad to the computer, and a power adaptor to service the LCD screen. The application will most likely need to be programmed using C# programming language. Due to the use of an LCD screen which will project the assigned keys, an existing application such as SharpKeys cannot be used; a new application will need to be coded.

Skills Required

There are multiple skills that will be required to accomplish this project. A sound understanding of C# programming language will be needed to code the application for the macro pad. A software developer will be required to produce the application, with an option of using Visual Studio.

There are multiple online tutorials and courses for C# language available. Access to a 3D printer will need to be obtained, in addition to the knowledge of 3D printer function to successfully produce the keypad cases and keys. The affordability of 3D printers is continuing to increase, making them a more feasible option.

The next steps for this project would be to generate a computer aided design, produce the application that can cast onto another screen, and a mock up case of the keypad.

Outcome

If the project is successful, this will allow people in the coding industry to have shortcuts on a separate keypad to be able to code easier and with more efficiency. It will allow users to create customisable shortcuts for keys that ordinarily use multiple commands and will be able to input them and save lines of code. Hopefully the end project will be slim enough to be seamless between the users’ keyboard and the LCD macro pad. Macro pads have been used in the industry for a while, but this will allow users to know exactly what symbols and codes they have assigned via the LCD screen.

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