**Introduction:**

University, the institution where students enrol in aim to attain higher education, to broaden their skills in critical analysis and holistic thinking. Why? To give them a better chance at succeeding in their field of work, to set them apart from their peers. With the high expectations of performing exceptionally at University, pressure can start to build up thus leading to depression and anxiety for the students. In a survey by the NUS it was found that “78% of university students had experienced mental health issues” during the academic year of 2014/15 with “33% recording suicidal thoughts” (Penn-Slater, 2017. ) Which can all be due to the fact that there is a large amount of workload for the students to complete whilst balancing a partime job and maintaining their social lives.

With mental health issues being so common for university students we have decided to develop the helpForum website and app for students suffering from anxiety and depression. The decision to develop this website and app as a extra support line for university students alongside their university’s support line. It can be said that a Universities support line should be sufficient enough for students but Universities are “under a great deal of financial pressure” in terms of fundings from the government which means that the help “counsellors can offer is limited” (Denham, 2013). Having this in mind the decision was made that a website and app that doubles as a forum would help students communicate frequently with their peers going through the same thing, to stop the from feeling so isolated and alone. We feel that this will provide a medium for students who shy away from seeking help from their Universities support line “due to fear and shame”. This is the result of the recognition of the “negative stigma and discrimination associated with having a mental illness” (Susman, 2015) as they may feel it could negatively impact their life.

There are various websites on the internet that provide support forums for young people that have mental health issues. For example, the “Emotional Support Forum” by SANE a charity company, the mental health forum which has consists of a wide range of forums that one could choose from dependant on the type of mental illness one is going through. From carrying out our research we found that they all proved a friendly space for individuals to discuss and support each other on their mental illness. They also provide a medium through which you can register and login to the website to become a member which is very similar to the website we are going to develop where students will get the chance to login, make a profile, post anonymously and get in touch with other students like them. Most of the forums online we found are targeted to the general members of the public whereas we want to target the website and the app for university students.

There are also applications that are available for mental wellbeing for example “Elefriends”, “Silvercloud” and “Reasons2” which provide a mobile platform to aid users manage their mental wellness and helping them feel better. In addition to this we have decided to include an app linked to the website to give the students mobile access to the support line, so they can always be updated by anything happening within the community like the applications that we have researched aim to do. The helpForum and application will be programmed using HTML, XML, CSS, SQL, Java, and JavaScript. To create a dynamic website which is user friendly, functional, and simple to navigate through to allow the user to understand the message we are trying to convey.

**Aim:**

Design and develop a dynamic web and mobile application to be used by university students suffering from depression and anxiety, giving them a support line to help them to manage their mental health issues. Both the website and mobile app should be professional and coherent in terms of design, must have ease of use and provide effective service to the user.

**Project-Level Objectives:**

* The web and mobile application design must be user-friendly
* Following on the design must be aesthetically pleasing and coherent all through the different platforms
* Must be easy to navigate between the webpages and the screens of the application
* Purpose of the website and application must be clear to the user
* The user must have an option to register to the service and be able to download the application on the mobile
* Integrity of user should be kept within the database
* The user should be able to post and communicate anonymously should they wish to withhold their identity in the forums
* The user must be able to choose between a depression forum or anxiety forum or both depending on their needs
* The website and application must be constantly updated to give the user constant support when needed

**Functional Requirements:**

Both the functional requirements and the non-functional requirements have been ordered from most important to least important.

1. Create a website forum/phone application for the discussion of mental health issues that has content such as:
   1. Forum for discussing mental health and asking questions to the community
   2. Recovery stories and coping strategies
   3. Access to resources (in the form of links or PDF’s)
   4. Self-assessment tools in the form of quizzes
2. Creation of Accounts
   1. Users should be able to sign up for their own account using an email, password, and a username
3. Store system data such as accounts and forum posts in a database
4. Levels of access that differentiate users, administrators, and moderators
5. All registered users should be able to:
   1. Create and edit posts on the forum
   2. Comment on posts
   3. Edit their profile, which includes the option to detail:
      1. Their profile pictures.
      2. Location
      3. Date of birth/Age
      4. A small summary of themselves
6. Users on the forum should be able to:
   1. Choose if they are posting in the anxiety forum or the depression forum
   2. Have the option to post anonymously
7. Administrators on the forum should be able to:
   1. Remove or add a moderator
   2. Manage settings and layout of the forum
   3. Remove inappropriate posts/comments
   4. Ban accounts
8. Moderators on the forum should be able to:
   1. Remove inappropriate posts/comments
   2. Ban accounts7

**Non-Functional Requirements:**

1. Consistent navigation, including a menu bar that is in the same place on every page
2. Responsive design that will adapt to most common devices – phone, desktop, tablet
3. Comfortable interface design with consideration given to accessibility when deciding layout and colours used
   1. Possible partially inherited style from the NTU website so it looks like it’s an NTU system
4. Web pages/phone application should load in under 3 seconds
5. Provide and FAQ/About page that details the aim of the system to the users, as well as rules of the forum

**Project management:**

To effectively manage the project through its stages of development various tools have been chosen to be used. To tackle the arrangement of group meetings around each group members schedules, a WhatsApp group has been made. By using this WhatsApp group, members can easily notify other members when they are available for meetings as well as communicate their progress on certain tasks. By using this effective method of communication, all members will be kept up to date on the progress of the project.

By creating a GitHub, tasks can be easily assigned to different members using issues. This will come in great use as it will deal with the lack of commitment from certain members, and will also constantly keep all members up to date on the progress of the project, as members will be able to close issues once finishing certain tasks.

The title ‘deputy for robustness’ has been assigned to Elliot Harding. His role will be to create GitHub issues, and ensure all members complete their assigned issues. This will be enforced using the WhatsApp group.

The role of creating and assigning tasks will be assigned to the project manager, Zainab Olawoyin. They will be responsible for making sure each of the group’s members strengths are used to their maximum potential. For instance, software engineers will work on the code of the app and website, while games tech students will focus on graphics.

**Sources of Information and Resources:**

**What we will need to find out:**

We will need to find out from current students at NTU if they have mental health issues, either now or in the past. Within that group we then need to see if they are being supported and where that support is coming from: friends, family, specialised support from work or education or support lines. This could give us an insight as to how we could structure discussions/posts in the forum as well as advice we could place in the website.

It would also be useful to get current students at NTU to rate the quality of their support from various places as well as how difficult they find talking to people they know that do not have mental health problems.

This information could be found through primary research in the form of a questionnaire, given to students to be filled out at the beginning of a lecture or seminar, to get a broader range of students we could also create the same questionnaire online and ask people to fill it out. This is so we don’t get students that are only in the field of Science and Technology.

Overall, a questionnaire would be very useful in helping us to determine specifics about how the system should work in terms of what we should be focusing on e.g. a place to discuss current issues with others, source of advice, source of where to get professional help. It also gives us specifics on what potential users would like to see in such a system and could give us some possible additional features that users say they would benefit from.

It would also be very helpful to research what questions are usually asked to determine if you are at risk of having mental illness such as depression or anxiety. These can be found all over the web, one that looks like it matches our purposes is the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). This test asks positively worded statement to the candidate and the candidate rates how much they agree with that statement from 1 to 5, considering how they have felt over the past two weeks. This then gives them a score at the end that estimates how good their mental wellbeing is.

This can be found on the NHS website nhs.uk/Tools/Documents/Wellbeing%20self-assessment.htm. More about the test can be found at: warwick.ac.uk/fac/med/research/platform/wemwbs/.

**Software requirements:**

For the website part of the development we will likely use Notepad++ to write the HTML, CSS, and JavaScript then use the Chrome Web Server extension to test the pages. Notepad++ can be downloaded for free from notepad-plus-plus.org and the Chrome Web Server can be downloaded for free from the Chrome web store. We will also need access to other web browsers to test how web pages appear in different browsers, Chrome is already installed on university computers as is Edge, Firefox can be downloaded for free from mozilla.org. Testing on different browsers gives the system more accessibility and allows us to find and fix any inconsistencies caused by different browsers.

The mobile application will be written in java and will likely be written in Visual Studios, the 2017 community version is available for free download from visualstudio.com and this software is also available through the software portal on NTU computers.

For the system overall, we will be using GitHub as a repository for programming files and documentation as well as a way of assigning work to be done by using issues on GitHub.

**Hardware requirements:**

To run a successful website, we need a web server to host on, we can make use of UDON to host our files on a university server. This is useful since we have already had experience with using this method in the past and have had very few issues with it. One problem however is that it is linked to the university’s intranet, so it can reliably be accessed from machines connected to the university network and although it can be accessed outside of the university network via “ntuanywhere” this access is not very reliable. Although the system is being developed as though it would be an integrated part of the NTU NOW student’s portal we have also explored other alternatives for web hosting servers. If we are to publish the website outside of the university, we could use any one of many free web hosting servers. These servers naturally come with limitations such as server space, speed of site and a guarantee of continuous uptime. One service that would suit our needs is freehosting.com. This service is free and provides the user with 250GB of bandwidth, 10GB of disk space, allows one SQL database and no ads.

Most of the hardware needed for this system is for the purposes of testing the website and application on different devices and at different resolutions to help test that we have achieved the requirements of making the system responsive and accessible on different platforms.

Different resolutions can be tested on PC’s and laptops by resizing the browser window or by using the Chrome developer tools to demonstrate what the web page looks like at different screen sizes. The mobile application can be tested using group member’s phones since we don’t all have the same phone it can give a reasonable range of usability although if we feel it’s necessary during testing we can borrow phones from the university.

**Risk Assessment:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Potential risk/hazard | Impact Rating | Probability Rating | Risk Score | Result of occurrence | Known problems | Precaution used to control the risk |
| Missing team members on a frequent basis | High | Medium | 2 | Work is not assigned to the team members missing and may not be completed to right standard. | Confusion on the part of the missing team member. Remaining members being unaware of the current project progress. | Converse between team using group meeting and social media. Contact tutor for support. |
| Lack of experience with software | Medium | Low | 1 | Tasks take longer than expected resulting in missed deadlines. | Not turning up to labs and completing work resulting in a lot of unfinished work causing delays. | Show up and complete each assigned task. Use free time to catch up in areas lacking. Ask group members for support. |
| Technical issues (computers/laptops) | Medium | Medium | 2 | Assigned work isn’t completed when expected. | Work lost. NTU systems down. | Ensure all work is backed up and is saved often. Give each member access to the work via online database to ensure it is always available. Make handwritten notes. |
| Miscommunication between the team | High | Medium | 2 | Tasks are done wrong. | More than one team member does the same assignment. | Ensure all tasks are specifically given to each member of the team. Often hold meetings to make sure each member is on task. |
| Software bugs | Medium | Medium | 2 | Unexpected results occur causing delays. | Assignments halted to work on fixing bugs. | Inform group members of the bugs found in program and ask for help. Use forums and research available to fix problems. |
| Using computers | Low | Low | 1 | Team members injured causing delays. | Too hot or cold due to temperature of computer rooms. Strained wrists. Shock from loose electrical equipment. Eye strain. | Always ensure you are comfortable when completing tasks. Take regular breaks. |
| Power failure | Low | Low | 1 | Tasks not completed or submitted when intended. | Power cut causing work being halted. | Ensure all group members have a copy of completed work so they can upload it in an emergency. Use library or computer rooms. |

**Professional, Social, Ethical & Legal issues:**

**Professional**

Developing an app/website that acts as a forum presents a variety of Professional issues:

**Maintain Confidentiality** - maintaining confidentiality is a professional issue that links with our project because we are allowing students to talk about personal problems they may have with other students, they may not be comfortable talking about in person. This becomes an issue if the people involved in the project start to talk about the problems and the people involved in them outside of a working environment, in a situation that has nothing to do with the websites goals.

**Consent** – consent is a professional issue that pertains to our project because we provide a platform that shares personal stories, meaning consent is needed if the information was to be shared anywhere other than on the forum. For example, if a student was to trust our forum with information that could be considered serious we would need consent from that person to hand it over to the university. This gives us the opportunity to develop new ideas to find ways to implement different ways to directly contact us directly through the project.

**Social:**

Developing an app/website that acts as a forum presents a variety of social issues:

**Cultural diversity** – creating our project can produce problems such as cultural diversity. This is due to the fact that our project heavily realise on social interaction between other people. The problem could occur if certain cultural barriers prevent other people with giving a solution that can help deal with problems. An opportunity this allows for is a chance to find a way to approach different cultures and delve into what makes them different. A way we could tackle this is to add a feature that gives options of helping people from different backgrounds, genders, year, etc.

**Target Demographic** – target demographics is a social issue pertaining to our project because it aims to attract students that are going through a problem such as depression or anxiety. Students often feel as if they have no one to trust or talk to which can lead to these issues. The project aims to tackle these social issues but runs the risk of attracting the wrong audience.

**Ethical:**

Developing an app/website that acts as a forum presents a variety of ethical issues:

**Privacy** – Privacy is one of the main factors of ethical issue that pertains to our project. We plan to allow people to talk about their problems with others, which creates privacy issues due to personal information being talked about. This can be a problem because certain people may have a bias towards a certain demographic based from the personal information provided. We plan on tackling this by making the forum anonymous which means all information will be private.

**Verbal abuse** – Verbal abuse is an ethical issue that could occur in our project. This is due to the project giving people the platform to talk with others and giving this ability can sometimes end in disagreements, especially over the internet. An issue such as this can be resolved in the programming stage by implementing ways to report users that are verbally offensive.

**Legal:**

Developing an app/website that acts as a forum presents a variety of legal issues:

**Keeping information safe and secure** - Keeping user information safe and secure is a legal issue provided by the data protection act aimed to ensure information isn’t lost or leaked. This is relevant to the group project because we will be providing students with a platform to share their experience of university in a forum format, which means we require students to enter personal information about themselves. This gives us the opportunity to implement different systems such as, an account system which requires users to create a username and password, meaning only they have access to any personal information they don’t choose to post. The app/website will also allow students to remain anonymous, so they are never required to enter any personal details.

**Using images** - Copyright is also a potential legal issue that is relevant to our project. One reason it pertains to us is if we use images in our project we run the risk of being sued for not complying with the Copyright, Designs, and Patents Act, which essentially ensures that all content creators have the rights to their creations. This could cause issues if using images with our project because we need to ensure that all the images are copyright free images, created by us or we have appropriate permission to use the images.

**Planning:**

**Design**

The design of the app will be 6 tabs on the main page containing Forums, Contact, anxiety (Topic), Depression (Topic), Account and settings. This breaks down each section into its own category giving it a simple look and making development easier. As a group the design of the app and website is purposely simple for the sole purpose of the user. Making the GUI easily navigable will increase satisfaction when using the app and website. This can be done through having each feature of the app and website visible from the home page, allowing users to have instant awareness of all the features.

The project is aimed for students suffering with depression and anxiety, so the presentation needs to be aimed for this demographic. A formal approach will be taken with bold colours to ensure the project looks professional. Although it will be more formal, we still plan on making the forum look friendly using a more social media like style, with pictures of students and videos that contain students and their own personal stories.

**Implementation**

The programming languages used for developing the app are java, XML, and SQL. The IDE that will be used to develop the app is eclipse because of its large library of extensions and frameworks that allow app development for android devices more efficient. SQL will be used for creating and managing the database that stores all the information from the app and website.

**Forum:**

The forum is the main feature of the app and will be used for all the discussions that take place using the developed software. We plan on implementing this through the use of a database, which will save the user data so it is possible to save and look at old posts. It will have social media elements such as accounts, liking and sharing others posts. XML will be used to transfer the data from the app to the database more efficiently, resulting in the speed times reducing.

**Contact:**

Contacts are a feature that are planned on being implemented to store the information for users to get in touch with others and leave feedback. The feature will add a layer of depth to our software because it is a way for users to engage with others more easily, which is the main purpose of the project.

**Development:**

**App**

The group decided to develop the app using the android platform. The programming languages the group chose are java, SQL, SQLite, and XML. The main features of the app are forums, contact, anxiety (Topic), Depression (Topic), Account and settings. The forum is essentially a chat, so making it have a social media feel to it is our goal.

**Website**

The programming languages the group will be using are html, JavaScript, and CSS. Each user will have their own account and all the information regarding that account will be saved to a database. The website is a forum for users to discuss their problems. The main features the website will have are accounts, notifications, timeline, and search.

**Testing**

Throughout the project there will be a variety of tests that take place. Whenever a feature is implemented tests will be ran to ensure they work correctly and correspond with the rest of the features accurately. Using the debugger will allow for these tests to be ran easily as it will highlight all errors that show up throughout development of our project. Testing of the database will include creating several accounts and storing information in them to see if the database collects the data correctly. Final testing of the app will include a public beta to see if there are any errors or faults with the app that previous testing didn’t reveal. Each student will receive a questionnaire to give feedback on the app.

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