Contents

CPD Activities

Since the start of term 1 I have been partaking in activities relating to my degree course and gaining CPD hours/points which count towards my total score. Below is a log of all activities that were involved, as well as evidence for each, the number of hours completed, and what was involved.

Mentoring Sessions

Activity	Mentoring Sessions
Hours Completed	3
Description	
Mentoring sessions were hosted weekly for my tutor group by two second year students (JC Biddlecombe and Maks Miketa). These sessions covered several aspects relating to both general university topics such as travel and living, in addition to course/work area specifics such as assignment and exam content, course schedule, and time management/planning techniques. These sessions were run using teams which allowed us to ask questions to the hosts and quickly and easily have them answered if we were to have any concerns.	
Reflection	
I believe that these mentoring sessions have been a benefit to me as they have allowed me to address any concerns I once had and have a better understanding of what was required of me both at Nottingham Trent University and on this specific course. Topics such as assignment/exam content was discussed, being able to understand what would be required of me in assignments and what knowledge I would need for exams in addition to the working environment of said exams (what was allowed/was not allowed) was a benefit. This helped reduce stress levels about exams and assignments as I had more knowledge of how things were assessed and what I must include. Methods of planning time and prioritising which work to focus on were also discussed. For example, it was recommended that we focus mainly on the things we don't understand and either get that work completed or to a point of understanding first which would increase the chances of us being able to complete all work on time for whenever it was due. Topics or tasks which we had more of an understanding in could then be prioritised less and focused on later. Planning time and creating things such as to-do lists, and schedules was also recommended. This would allow us to have a more structured plan on what we should do and possibly have more of a sense of accomplishment when completing tasks. I think doing this has helped me keep on track thus far and I have been able to complete all work that I intended to within this time frame. Overall, I believe there was a big benefit of these mentoring sessions and think that they have helped myself and other first-year students alike get to grips with the requirements of university better.	
Dates Completed	30/09/2021, 07/10/2021, 28/10/2021

Workshops/Study Groups

Activity	Workshops/Study Groups
Hours Completed	4
Description	
Workshops and Study Groups have been running throughout this term which allowed students to attend to get more of an understanding of whichever topic was covered. I have attended the following. • Python Workshop • TECH Strand (Boolean Algebra, Binary, Hexadecimal, Logic Gates) Study Group These seconds were also run using Microsoft Teams allowing multiple people to participate and ask/answer questions where required.	
Reflection	
The sessions that I attended were a benefit. They either allowed me to strengthen my knowledge in areas or confirm that I was following best practices/techniques to complete work to a high quality. Python Workshop - Although I believe I am already quite versed in python, attending this workshop allowed me to clear any doubts that I have and confirm that I am doing things properly/following best practices. This workshop covered things such as variable declaration (naming schemes, scope), data types & type casting, functions, and basic error handling/validation. TECH Strand Study Group – This study group was organised by me and other students in the COMP10082 group and covered all topics necessary for the TECH strand logic exam. Demonstrations were given by me and others on how to do things such as binary multiplication, 2s compliment addition, hexadecimal/decimal conversion (back and forth), Boolean algebra, and logic gates. Two study sessions were run, one in the morning and one in the afternoon of Monday the 25th of October 2021. I 100% believe these sessions were of benefit to me and helped me in scoring 35/40 (87.5%) on the TECH Strand Logic test.	
Dates Completed	27/10/2021, 25/10/2021

Personal Project Development

Activity	Personal Project Development
Hours Completed	8

Description

Both developed and/or maintained several personal programming projects of mine using a variety of programming languages, techniques and technologies. The following is covered in this area.

- Python Programming
- Java Programming
- JavaScript Programming
- Usage/Management of Linux VPS Systems
- Usage of Docker
- Webservers
- Programming practices/principles

Reflection

I believe that working on my own personal projects over this time has helped me strengthen my knowledge on programming techniques including error handling, error correction, efficiency of my programs and following principles such as the DRY (Do Not Repeat Yourself) principle. Here are some summaries of what I worked on.

Personal Website – My personal website holds information about myself and thing I have done/accomplished (similar to this report really). The website is written using HTML and CSS, with a Node.js JavaScript backend webserver serving data to the front end. The Handlebars web framework is also used allowing me to pass data from front to backend within .hbs files using HTML.
I focused a lot on not having to repeat code/markdown that I had written when building this site. Therefore, although the frontend might look like it contains a lot of content, containers and sections. Using JSON dictionaries and Loops in the backend allowed me to cut down on repetition. For example, if you head to the editing section, although you may see several videos. On the backend this is one single loop that fetches data from a JSON file and creates a number of different elements on the frontend meaning I did not have to copy the same container code multiple times withing the HTML/Handlebars file.
This website is then hosted within a Docker container on my Linux VPS. I decided to use docker as it allows me to have all of my online projects operate completely separate from one another. If something were to potentially go wrong with one, it wouldn't affect the others. The website is behind the https://raffsimms.com/ domain name and uses Cloudflare as a proxy.

Bind Keylogger – When looking for a cyber-security related project to do, I settled on a keylogger. However, the keylogger part wasn't enough and I wanted to add more functionality.
Once the keylogger was completed I decided to implement sockets and threading to create a server that could accept and manage connections from multiple clients simultaneously. The server is run as a single python file and will accept connections from clients (separate python file) which is in reality, the keylogger. When a user using a machine that the client file is running on uses the keyboard, the keystroke data is instantly sent to the server over the socket connection. This server could be running on an external server somewhere (been tested) and can be connected to by specifying the IP address and open port for the socket within the client file.
The server includes a command-line interface allowing the person hosting it to interact with data it receives and control all connected sessions.

Social Scanner Website – This Is a web app developed to allow people to check the availability of a username on a variety of different online platforms. This uses the same technologies and hosting method as my personal website mentioned above, and also has heavy use of the dry principle. To check the availability of usernames on websites where APIs are not available, a simple page request can be used the *majority* of the time returning a 200 (username not available) or 404 (username available). To achieve this, I only had to create one function and could then make use of variables and parameters to check multiple websites. Therefore, not having to repeat code at all.

There are a number of other projects which I have not covered in this discussion but the majority of them can be seen by visiting my GitHub profile https://github.com/fwiko.

Dates Completed	Multiple

Evidence/Images

Bind Keylogger Server Interface

```
bind-logger:> start
bind-logger:>
[LISTENER] > Listening on 0.0.0.0:6666

bind-logger:> help

               sessions | List all active sessions.
      logs <session_id> | Display the logs of specified session.
      save <session_id> | Save the logs of specified session to a file.
                   help | Display this list.
                options | Display a list of variable options.
 set <variable> <value> | Change the value of one of the available options.
                  start | Start the keylogger connection listener
                   kill | Stop a specified session/client connection.
                   exit | Shutdown listener server and close all sessions.

bind-logger:>
```

Social Scanner availability check (Traditional Check) function.

```
// Check used for services that can be queried in the easiest way based on the 200 or 404 response code
#traditionalCheck(options) {
    var that = this;
    return new Promise(async function(resolve, reject) {
        var availability, code;
        try {
            const response = await got(options.url);
            var code = response.statusCode;
        } catch (error) {
            var code = error.response.statusCode || 404;
        }
        if (code == 200) {
            availability = false;
        } else {
            availability = true;
        }
        let response_data = {
            availability: availability,
            icon: options.icon,
            service_name: options.service_name,
            link: options.url
        }
        if (options.link) {
            response_data.link = options.link
        }
        resolve(response_data);
    });
}
```

Cyber Security Challenges

Activity	Cyber Security Challenges
Hours Completed	10

Description

TryHackMe is an online platform that allow users to learn cyber-security through challenges that are often based on real-world scenarios. there are a wide range of difficulties with challenges getting harder as you progress. there are learning paths set out to allow the user to follow a set path to feel a sense of direction including an offensive security path and defensive security path.

Completing multiple tasks and pathways over the past year (including past couple of months) attaining knowledge in multiple areas of cyber-security. These include.

- Linux system usage
- Usage of security tools
- Exploitation of security vulnerabilities
- Cryptography and Encryption
- CTF Challenges

Reflection

Throughout my time using TryHackMe I covered many topics in both the cyber-security and more generalised computing fields. I believe the activities that were offered and the ones that I completed gave me a good insight into what was involved in the cyber-security scene in addition to giving me valuable experience using different tools and techniques. Below is a summary of some of the topics covered.

Operating Linux Systems - When completing tasks on TryHackMe, being able to access and utilize a Linux system was a must. this allowed me to have the best experience as most tools used in each task were built with and for Linux operating systems. to achieve this, I used the virtualisation software "VMware workstation" to virtualise a kali Linux desktop system on my windows machine.

Utilisation of Security Tools - Through my time using TryHackMe I completed many CTF (capture the flag) challenges requiring me to use the knowledge that I had gained to gain access to external machines/networks using a variety of techniques and security tools.

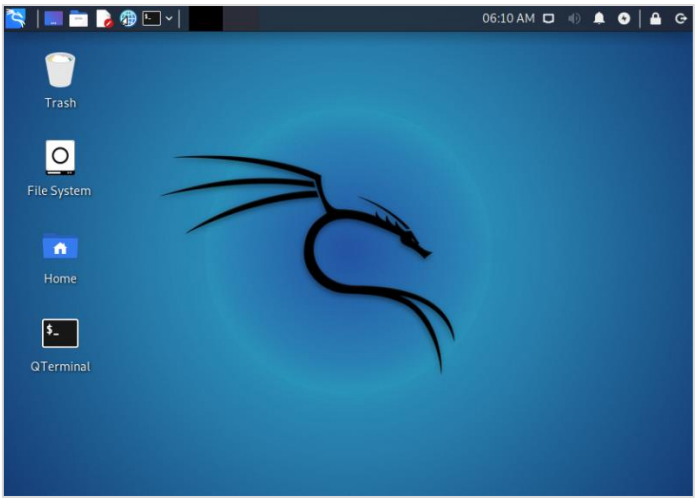
I believe that completing a variety of tasks using TryHackMe has given me some incredibly valuable experience that will help me in the future, especially when completing this degree course. the tasks I have completed are directly related to this degree course I am studying, and I hope I can put what I have learnt to good use.

I gained a vast amount of experience on TryHackMe over the many hours I spent doing tasks and challenges. eventually reaching level 9, which I believe is a mid-tier level on this particular site.

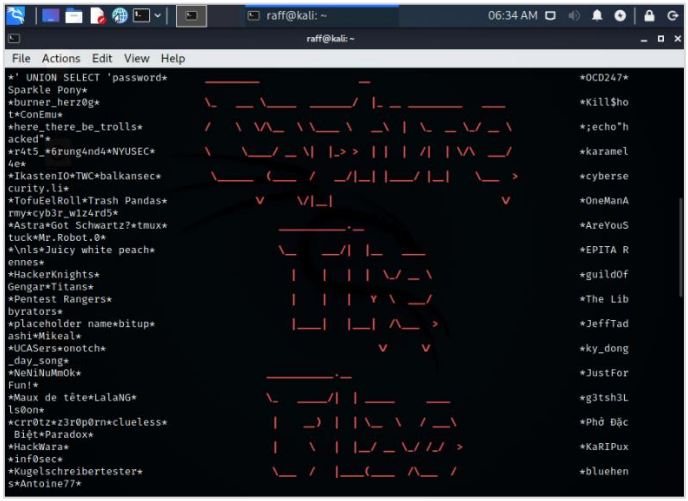
Dates Completed	Many

Evidence/Images

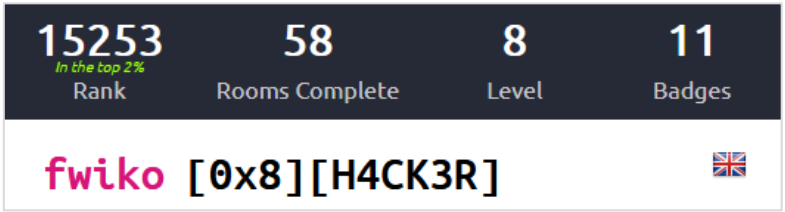
Virtualised Kali Linux Desktop



Metasploit Main Menu/Interface Screenshot



TryHackMe Level/Progress



Part-Time/Freelance Job

Activity	Part-Time Job
Hours Completed	10
Description	
Over the past couple of months, I have continued to complete work at my part-time job. this includes using software from the adobe suite to create video content. Both video editing, aspects of graphic design, and sound design are involved when creating this content. this requires me to meet deadlines and work with a team to have the best result possible. The following software is used regularly when doing so. • Adobe Premiere Pro • Adobe Photoshop • Adobe Audition When given a task to complete, it is my job to take whatever footage/content i am given and comprise it within an 8- to 10-minute-long video clip. this helps with retention and maximising profits on the video platform of choice. The software used is adobe premiere pro, sometimes used in conjunction with adobe photoshop and adobe audition. this software is an industry standard and allows content to be created to the highest quality.	
Reflection	
Money	
Dates Completed	Multiple Days
Evidence/Images	
https://www.youtube.com/watch?v=ndzypzPGHJs	