# CS4400 Module Final Report

**Submitted by-Yash Pandey**

**17317629**

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## Inferno ball team self-evaluation-

Team number- 31 in the mail but according to the score on leaderboard team 32

Team members- 1) Nicholas Blott

2) Aron Hoffmann

3) Stefano Lupo

4) Yash Pandey

| | Nick | Aron | Stefano | Yash |
|---|---|---|---|---|
| Effort | Medium | High | High | High |
| Effectiveness | Low | High | High | Medium |

Everyone except Nick put in as much efforts as they could have, Nick was on a vacation at that moment of time and hence he couldn't put much efforts and neither he was very effective, but he tried to put in as much as he could have considering he was not in the country. This was not the task which could have been divided equally between all the team members. The important part in this task was not who will do it but how will we do it, we all had group meetings where we discussed how we will proceed with the task in which all of us put in all our efforts once we figured out what needs to be done we just needed the resources and put it running on the systems. Since Aron and Stefano were most technically skilled out of us they worked more on the technical part of the task that is writing the code while I focused more on administration part of the task that is support them and make as resources available, such as AWS or google cloud. Everyone participated equally in the group discussions.

## What I learned-

By taking this module I learned various technical skills as well as various professional skills. I learned the theories, principles and practices in the broad present day scalable computing domain as well as in future scalable computing domain. I learned about the practical systems, tools and techniques needed to create scalable systems. I identified the appropriate platforms and systems needed to solve different problems. I understood the significance and role of emerging technologies in scale computing contexts. I learned the reasons about the performance trade-offs in choosing, developing and deploying in different scalable paradigms. Apart from the technical skills I developed various soft skills working as a part of a group. I developed teamworking skills such as how to break a complex task into parts and steps as different members of the team have different skills set. I learned time management which was an essential part if we were to complete the project before deadline, and I learned that if we need to manage time we need to plan things in advance and follow that plan. Also working in a group, I learned how to refine understanding through discussions and explanation which ultimately leads to overall efficient performance to the team. I also learned how to deal with criticism whether it is about being critical to others ideas or if it's about taking criticism about your own self, in the end this criticism and feedback improves the performance of the team. Groups can be most efficient if there a good communication between team members and hence I improved my communications skills a lot working in a team.

## What I did-

The first practical was fairly simple, the aim was to benchmark john the ripper on ec2 instance. To do this firstly I registered with the rosettahub and I got my budget. After this I created a ubuntu instance on rosettahub. I created a code subdirectory in my home directory then I cloned the jumbo version of the john the ripper into code subdirectory from github repo. (https://github.com/magnumripper/JohnTheRipper). After compiling john the ripper I ran the benchmarking script and the output of which I submitted on github and got full grades.

In the second practical a list of 1000 hashes were mailed, and I had to solve them. First, I had to identify the types of hashes given for which I matched the format of hashes with a list I found online and I found that they were md5 crypt type of hashes. I compiled john the ripper on my personal computer using the same steps I used in the previous practical. I downloaded rockyou wordlist as it is the most widely known and one of the largest wordlists. Then I used john the ripper to solve these hashes using the command, ./john –wordlist=rockyou pandeyy.hashes, the recovered passwords were saved in the pot file created in the run subdirectory of john the ripper directory. I successfully recovered all the 1000 passwords as managed to get full grades when I submitted .broken file on submitty.

In the third practical a list of 2000 hashes were mailed, and I had to solve them. My approach towards this task was not correct as I initially thought that like previous hash cracking tasks it won't take me more than two days to complete, and this assumption proved to be very fatal for me. Firstly I installed hashcat both on the AWS instance as well as my personal computer using the list of steps provided online. When I looked at my hash file I found that there were four types of hashtypes that were md5crypt(500), descrypt(1500), sha512crypt(1800) and sha256crypt(7400). Initially I used rockyou wordlists and created four instances with each hashtype algorithm running on one instance, the command used was hashcat -a - o -m500/1500/1800/7400 -w4 – 0 --potfile-path hashes.broken pandeyy.hashes rockyou.txt. As soon as I started my instances I realised that I wont be able to complete this pratical because it was taking too much time. After I recovered few hundreds passwords I realised that there were basically three patterns, first was words from rockyou itself, second  was 5 word lowercase words passwords and the last type was a combination of 4+4 lower case words passwords. To tackle 5 words passwords I used brute force for 5 words which again took hours and I was not able to complete it. In the end due to my bad judgement and lack of time I was able to crack only 700 odd passwords out of 2000. Pbkfd and argon2 were left untouched.

The fourth and final practical was the infernoball challenge which was alos a group activity. We had to crack 10 levels. The secret to next level was to be found out by using the passwords cracked using the previous level. Everyone except Nick put in as much efforts as

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## Module Evaluation-

**Dislikes-**

1) The way course was designed was not bad but could have been better.
2) I feel that if this course was taught in a traditional way of teaching that is from a specific book or a syllabus, the knowledge gained by the students would have been better.
3) The fact that there were post grads as well as undergrads in this module should have been considered while designing the course as there is a certain knowledge as well as skill difference between a undergrad and a post grad student.
4) Since the course content was not specific every individual got somewhat different idea about the module depending on the resources they used.

**Likes-**

1) The concept of the course was very interesting.
2) The theories, principles and practices of the same were conveyed well.
3) The practical assignments were the best part of the module and were very interesting.
4) This module helped in the development of various skills both technical and professional skills.