

Important Note:

You can do this assignment in pairs. You can either write code in python or java. If there are questions ask the course staff; they are there to help you. Other than your partner you are not allowed to discuss your code with anyone.

Students are strongly advised that any act of plagiarism will be reported to the Disciplinary Committee.

Problem:

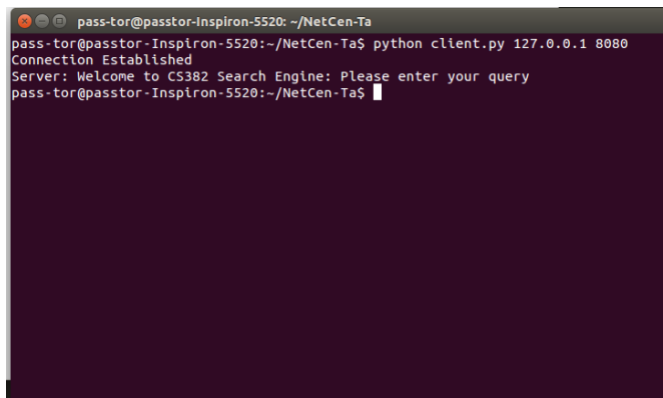
You will use Linux environment for this assignment. The assignment consists of three parts based on simple socket programming and text matching. Sample test data is provided. In this assignment you are required to implement a simple search engine. This basically means that whatever a particular client types in the search engine he should receive all the relevant files. You must compare the input string with the name of the file as well as what is written inside the file for a match.

Part 1 (30 marks):

You must write a file name client.py <IP> <Port> or client.java <IP> <Port> which should connect with another file server.py <Port> or server.java <Port>. Command for server: server.java

When the connection is established, the server must ask for a search query with a message similar to:

After client types in a search query and sends it to the server, the server must reply with the results.

A terminal window with a dark purple background. The title bar shows 'pass-tor@passtor-Inspiron-5520: ~/NetCen-Ta'. The terminal text shows a user running 'python client.py 127.0.0.1 8080', which results in 'Connection Established'. The server then sends a welcome message: 'Server: Welcome to CS382 Search Engine: Please enter your query'. The prompt returns to the user.

```
pass-tor@passtor-Inspiron-5520: ~/NetCen-Ta
pass-tor@passtor-Inspiron-5520:~/NetCen-Ta$ python client.py 127.0.0.1 8080
Connection Established
Server: Welcome to CS382 Search Engine: Please enter your query
pass-tor@passtor-Inspiron-5520:~/NetCen-Ta$
```

When a client sends an input string to the search engine, it should look up in all the folders (including sub-folders) and compare the string with the name of the file(e.g., of .txt or .mp4 file) and also what is inside the file (e.g., in the case of .txt file). The server should reply with all the filenames and text where matching occurs. Please note: you cannot use any file system or search commands such as grep.

Sample Search on “Manchester” Returned with these results.

Part 2 (40 marks):

After search results have been displayed to the client, the client can now initiate a new search or request to download the file from the server. The file should be downloaded to the client’s current directory. The client must maintain TCP connection until it sends an exit request or terminates unexpectedly. You are supposed to handle all disconnections (intentional or unintentional) appropriately.

Part 3 (30 marks):

Any number of users could connect to the search engine at the same time (Multi-threading is required).

What do you need to learn (on your own / through the tutorial)?

Socket programming interface in Java or Python (whichever you like). Client-server programming in Python or Java. Multi-threading in Python or Java. Python Networking Guide: http://faculty.salina.k-state.edu/tim/NPstudy_guide/index.html

s no point in remaining here waiting for a chance that never comes." The attacking midfielder also claims he has not had the backing of boss Martin O'Neill since his move to Celtic Park. "I can't understand why I am in this situation," he continued. "When a manager brings a new player to the club, he gives that player support."

bbsport/football/239.txt: If Chelsea are found guilty of an illegal approach, they could be deducted points - although Arsenal boss Arsene Wenger has said he would be opposed to this. Aston Villa were recently given a reprimand by the Premier League after Southampton complained about an approach to James Beattie earlier in the season. Chelsea boss Jose Mourinho, speaking after his side's draw with Manchester City on Sunday, insisted he is not worried about the inquiry or its outcome. "To me, the effect is zero," he said. "I know nothing about it and I don't want to know about it. I'm not worried about it. My life is the same, trying to enjoy my work and my life." Meanwhile, Everton boss David Moyes told BBC Radio Five Live that stopping clubs from approaching players via their agents would be difficult. "It's part of football and will be very hard to change. It does happen a lot," he told BBC Radio Five Live's Sportsweek programme. "It should be manager to manager or chairman to chairman but the way modern football has gone I don't think that happens. "There is a way the player gets got to but that is part of football. I don't think it is right but that is the way it works."

bbsport/football/161.txt: Boss Sir Alex Ferguson was left rueing Manchester United's failure to close the gap on Chelsea, Everton and Arsenal after his side's 1-1 draw with Fulham.

bbsport/football/064.txt: AC Milan defender Jaap Stam says Manchester United "know they made a mistake" by selling him in 2001.

bbsport/football/064.txt: The sides meet at Old Trafford in the Champions League game on Wednesday and the 32-year-old's Dutchman's presence is sure to add spice to the fixture. "United made a mistake in selling me," Stam told Uefa's Champions magazine. "I was settled at Manchester United, but they wanted to sell me. If a club want to sell you, there is nothing you can do. You can be sold like cattle." Sir Alex Ferguson surprised the football world - and Stam - by selling the Dutchman to Lazio for £16.5m in August 2001. The decision came shortly after Stam claimed in his autobiography that Ferguson had tapped him up when he was at PSV Eindhoven. But Ferguson insisted he sold the defender because the transfer fee was too good to refuse for a player past his prime. The affair still rankles with the Dutchman.

bbsport/football/064.txt: "I was settled at Manchester United, I had even just ordered a new kitchen, but they wanted to sell me," he said. "In what other industry can a good employee be ushered out the door against their wishes? Of course, you can refuse to go, but then the club have the power to put you on the bench. I don't agree that players control the game. "There have been opportunities to confront them in the newspapers, but I have turned them down. What's the point?"

bbsport/football/076.txt: The Spanish Football Federation at first declined to take action against Aragonès, but was then requested to do so by Spain's anti-violence commission. The fine was far less than the expected amount of about £22,000 or even the suspension of his coaching licence. Arsenal boss Arsene Wenger, who was fined £15,000 in December for accusing Manchester United striker Ruud van Nistelrooy of cheating, believes that Aragonès' punishment was too lenient. "You compare his fine and my fine, and if you consider his was for racist abuse, then you seem to get away with it more in Spain than you should," Wenger said. "He shouldn't have said what he said, and how much money is enough, I don't know but it doesn't look a big punishment." However, Aragonès insists the fine is unjustified and unfair. "I have been treated like Islero (the bull that killed famous bullfighter Manolete)," said Aragonès on hearing he had been fined for his actions. "I have not liked one thing about this whole affair and I do not agree with the sanction. They have looked for a scapegoat." Spain's anti-violence commission must now ratify the Spanish FA's decision and has until next week to announce its verdict. Aragonès has 10 days to appeal, and the commission can also appeal. Alberto Flores, president of the Spanish FA's disciplinary committee, said no-one in the committee felt Aragonès was a racist nor had "acted in a racist way." "A fine, the highest we could apply, is sufficient punishment. Suspension would have been a bit exaggerated," Flores told sports daily Marca.

bbsport/football/188.txt: Manchester United's Alex Ferguson has praised his players' gutsy performance in the 1-0 win at Aston Villa.

bbsport/football/054.txt: Manchester United fans wearing Eric Cantona masks will not be allowed in Selhurst Park on Saturday.

bbsport/football/144.txt: Manchester United manager Sir Alex Ferguson said he has no regrets after his second-string side lost 3-0 away at Fenerbahçe in the Champions League.

Java Networking Book:

<http://stories20.com/allphoto/pdf/admin/An%20Introduction%20to%20Network%20Programmi%20with%20Java%20Java%207%20Compatible%20.pdf>