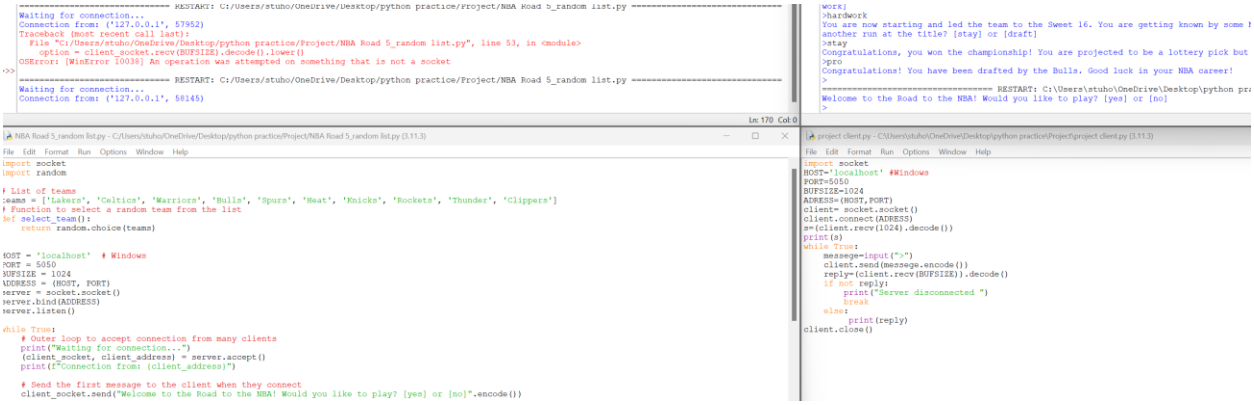
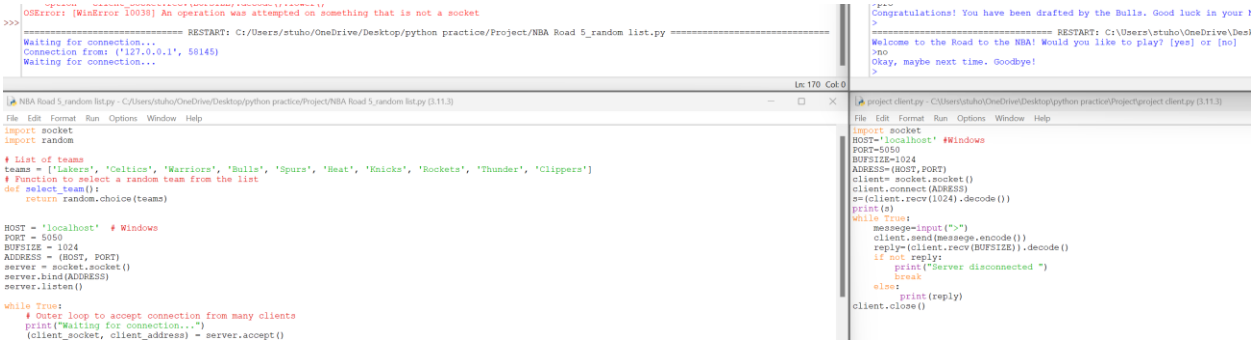
Project Report

- **The problem statements.**
    - Demonstrate your understanding of the applied aspect of Python and socket programming in your concentration.
- **The details about the hardware**
    - Device name StuHpEnvy
    - Processor 12th Gen Intel(R) Core(TM) i7-1255U 1.70 GHz
    - Installed RAM 16.0 GB (15.7 GB usable)
    - Device ID FFE4A83F-F3FE-4E6B-BA12-C20518C7D004
    - Product ID 00342-22069-35905-AAOEM
    - System type 64-bit operating system, x64-based processor
    - Pen and touch Pen and touch support with 10 touch points
    - Edition Windows 11 Home
    - Version 22H2
    - Installed on 11/16/2022
    - OS build 22621.1555
    - Experience Windows Feature Experience Pack 1000.22640.1000.0
- **Software used to implement the project**
    - Python 3.11 64bit
- **The results and discussions.**
    - This is a text-based game that simulates a basketball career path. It uses sockets to communicate with clients over a network connection. The game presents a series of choices to the player and responds based on their input.

- The game starts by listening for incoming connections on a specified host and port. When a client connects, it sends a welcome message asking if the player wants to play. The player can respond with "yes" or "no". If the player chooses to play, the game progresses through a series of nested loops, each representing a different decision point in the player's career.

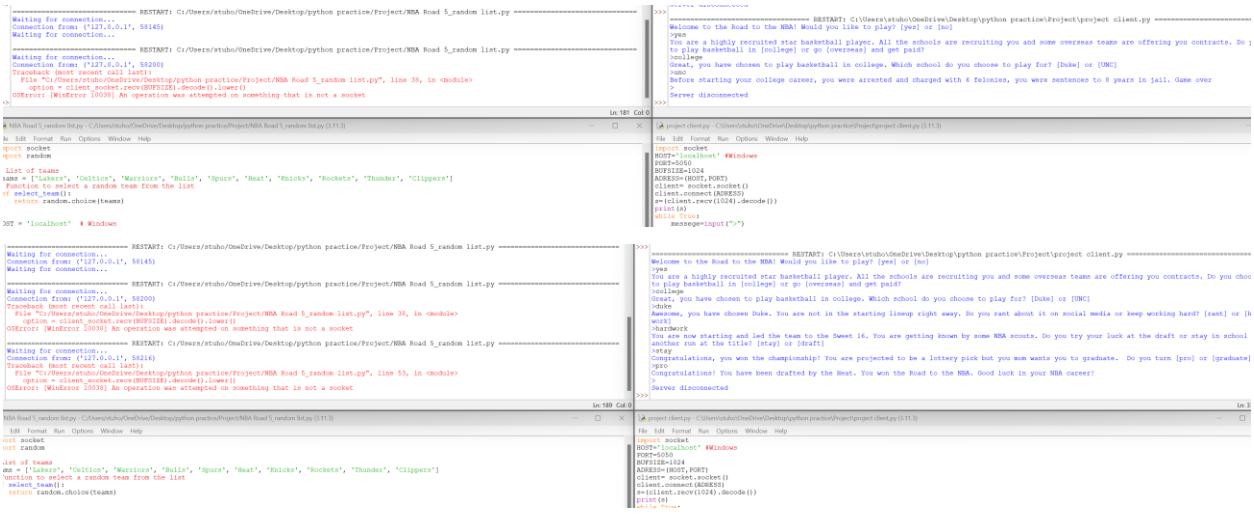


- If the player chooses not to play or enters an invalid input, the game responds accordingly and ends the connection with the client.



- The game offers choices such as playing in college or overseas, choosing a college team, dealing with challenges like not being in the starting lineup, deciding whether to stay in college or enter the NBA draft and so on. The game responds to the player's choices with appropriate

messages. The player's career path can lead to different outcomes, such as winning a championship, getting drafted by an NBA team, graduating, or facing setbacks like injuries, arrests, or career-ending events. Upon completion, the game randomly selects a team from the list using the random function.



- Internal documentation (i.e., comments) is required.
    - It's important to note that this code only handles one client at a time, as it waits for client responses in nested loops. If multiple clients connect simultaneously, the game will handle them sequentially. To support concurrent connections, the code must be modified to handle multiple clients using threads
    - Additionally, error handling and input validation could be improved to provide a better user experience.

Appendix.

```
import socket
import random

# List of teams
teams = ['Lakers', 'Celtics', 'Warriors', 'Bulls', 'Spurs', 'Heat', 'Knicks', 'Rockets',
'Thunder', 'Clippers']
# Function to select a random team from the list
def select_team():
    return random.choice(teams)


HOST = 'localhost'  # Windows
PORT = 5050
BUFSIZE = 1024
ADDRESS = (HOST, PORT)
server = socket.socket()
server.bind(ADDRESS)
server.listen()

while True:
    # Outer loop to accept connection from many clients
    print("Waiting for connection...")
    (client_socket, client_address) = server.accept()
    print(f"Connection from: {client_address}")

    # Send the first message to the client when they connect
    client_socket.send("Welcome to the Road to the NBA! Would you like to
play? [yes] or [no]".encode())

    while True:
        # Wait for the response from the client
        data = client_socket.recv(BUFSIZE).decode()

        # Check what the client's response is
        if data.lower() == "yes":
            # If the client wants to play, send the next message
            client_socket.send("You are a highly recruited star basketball player. All
the schools are recruiting you and some overseas teams are offering you
contracts. Do you choose to play basketball in [college] or go [overseas] and get
paid?".encode())

            while True:
                option = client_socket.recv(BUFSIZE).decode().lower()
                if option == "college":
```

```
                client_socket.send("Great, you have chosen to play basketball in college. Which school do you choose to play for? [Duke] or [UNC]".encode())

                while True:
                    option = client_socket.recv(BUFSIZE).decode().lower()
                    if option == "duke":
                        client_socket.send("Awesome, you have chosen Duke. You are not in the starting lineup right away. Do you rant about it on social media or keep working hard? [rant] or [hardwork]".encode())

                        while True:
                            option = client_socket.recv(BUFSIZE).decode().lower()
                            if option == "hardwork":
                                client_socket.send("You are now starting and led the team to the Sweet 16. You are getting known by some NBA scouts. Do you try your luck at the draft or stay in school for another run at the title? [stay] or [draft]".encode())

                                while True:
                                    option = client_socket.recv(BUFSIZE).decode().lower()
                                    if option == "stay":
                                        client_socket.send("Congratulations, you won the championship! You are projected to be a lottery pick but you mom wants you to graduate.  Do you turn [pro] or [graduate]".encode())

                                        while True:
                                            option = client_socket.recv(BUFSIZE).decode().lower()
                                            if option == "pro":
                                                # Call the select_team() function to select a random NBA team
                                                team = select_team()
                                                client_socket.send(f"Congratulations! You have been drafted by the {team}. You won the Road to the NBA. Good luck in your NBA career!".encode())
                                                client_socket.close()
                                                break

                                            elif option == "graduate":
                                                client_socket.send("You were able to make mom happy and graduate but an unexpected injury ended your baseball career you did not make it to the NBA, Game over".encode())
                                                client_socket.close()
                                                break
                                            else:
                                                client_socket.send("Invalid option. Please choose [pro] or [graduate].".encode())
```

```
                elif option == "draft":
                    client_socket.send("You didn't get drafted but you were invited to tryouts during summer league. You didn't make the team and played in the G-League before a career ending injury. You did not make it to the NBA, Game over".encode())
                    client_socket.close()
                    break
                else:
                    client_socket.send("Invalid option. Please choose [stay] or [draft].".encode())

            elif option == "rant":
                client_socket.send("The coach and his staff heard about your rant and benched you for the rest of the season. You transfered next year but was labeled player with a bad attitude. You did not make it to the NBA, Game over".encode())
                client_socket.close()
                break
            else:
                client_socket.send("Invalid option. Please choose [rant] or [hardwork].".encode())

        elif option == "unc":
            client_socket.send("Before starting your college career, you were arrested and charged with 6 felonies, you were sentences to 8 years in jail. Game over".encode())
            client_socket.close()
            break
        else:
            client_socket.send("Invalid option. Please choose [UNC] or [Duke].".encode())

    elif option == "overseas":
        client_socket.send("You had a bad attitude, was unliked by the team, got in to a bar brawl, was arrest and sentence to three years in jail. Game over".encode())
        client_socket.close()
        break
    else:
        client_socket.send("Invalid option. Please choose [college] or [overseas].".encode())

elif data.lower() == "no":
    client_socket.send("Okay, maybe next time. Goodbye!".encode())
    client_socket.close()
```

```
                break
            else:
                client_socket.send("Invalid option. Would you like to play? [yes] or
  [no]".encode())
```

```
import socket
HOST='localhost' #Windows
PORT=5050
BUFSIZE=1024
ADRESS=(HOST,PORT)
client= socket.socket()
client.connect(ADRESS)
s=(client.recv(1024).decode())
print(s)
while True:
    messege=input(">")
    client.send(messege.encode())
    reply=(client.recv(BUFSIZE)).decode()
    if not reply:
        print("Server disconnected ")
        break
    else:
         print(reply)
client.close()
```