# Computer Science

# Practical File

**Submitted by: -**

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# CERTIFICATE

This is to certify that this practical file is made by **Aditya Sharma,** Roll No.
of Kendriya Vidyalaya Robert Square, Gole Market, New Delhi to serve the purpose of submission to CBSE as Computer Science Practical File for Class 12, academic session 2023-24.

He has taken interest and has shown at most sincerity in completion of this Practical File.

This file represents his original work done in the session 2023-24 and is not counterfeit.

Internal Examiner

External Examiner

# ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my teacher Mrs. Geeta Kumari as well as our principal sir, who gave me this golden opportunity to do this wonderful project. This project also helped me in doing a lot of research and I came to know about so many new things.

I am extremely grateful to my parents and my friends who gave valuable suggestion and guidance for completion of my project. This cooperation and healthy criticism came handy and useful with them.

Hence, I would like to thanks all the above mentioned people once again.

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# System Requirements (minimum)

## 1. Hardware:

**(a)** 1 GB RAM

**(b)** 5 GB free memory

**(c)** Intel Pentinum Processor

**(d)** 2 GHz CPU clock rate

## 2. Software:

(a) Windows 7 O.S.

(b) 32 bit O.S.

(c) X32 based processor

## 3. Front End:

(a) MySQL 8.0.0 or higher, with the X Plugin enabled

(b) Python >= 3.8

(c) Python-MySQL Connector module

(d) 'random' module

(e) 'math' module

## 4. Back End:

(a) Protobuf C++ (version >= 4.21.1, <= 4.21.12)

(b) Python Protobuf (version >= 4.21.1, <= 4.21.12)

(c) MySQL configured with:

i. User: 'Admin5'

ii. Pass: 'Admin@12345'

iii. Host: 'localhost'

iv. Database: 'pyprjt'

v. Table: 'Store' with attributes- (User_Id- int, Name-varchar, Score- int, password- int)

## Introduction to Program

This program is a basic game which uses math.randrange() function to obtain a random integer between 1-6 (both inclusive) and then asks user to enter a random.

In first turn,
Until the computer's random number equals to the number entered by the user, user's score increases. After which, the user's turn ends

Then computer's turn to score begins,
In this, the computer scores increases until user guesses the number which computer has chosen.

At the end after both the rounds is over,
The final score is calculated and on the basis of score, the winner is chosen.

If the user wins the game, then his final score is added to his user-profile in MySQl database

If the person loses, then his score is reduced from the database.

If match is tie, or both (of user and computer) scores are same, then previous score is maintained.

# Introduction to Python

**Python** is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation.

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library.

Guido van Rossum began working on Python in the late 1980s as a successor to the ABC programming language and first released it in 1991 as Python 0.9.0. Python 2.0 was released in 2000. Python 3.0, released in 2008, was a major revision not completely backward-compatible with earlier versions. Python 2.7.18, released in 2020, was the last release of Python 2.

Python consistently ranks as one of the most popular programming languages.

# Introduction to MySQL

**MySQL** is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter My, and "SQL", the acronym for Structured Query Language. A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language that programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010, when Oracle acquired Sun, Widenius forked the open-source MySQL project to create MariaDB.

## Program Code:

```
#program for a game of guess match

#initalising...

import random
import math
import mysql.connector as SQlmodule
db=SQlmodule.connect(
   host='localhost',
   user='Admin5',
   password='Admin@12345',
   database='pyprjt')
sql=db.cursor()


#global variable define
user_score = 0
comp_score = 0
user = 0
user_name= ''
name = ''
mScore = []
mScore1 = []
reserved = []
passList = []
namee = []

#get db values
```

```
sql.execute('select User_Id from store;')
res=sql.fetchall()
for i in res:
   for j in i:
      reserved.append(j)

sql.execute('select name from store;')
nam=sql.fetchall()
for i in nam:
   for j in i:
      namee.append(j)

sql.execute('select Score from store;')
sco=sql.fetchall()
for i in sco:
   for j in i:
      mScore.append(j)

sql.execute('select password from store;')
passL=sql.fetchall()
for i in passL:
   for j in i:
      passList.append(j)

#gui
print('This game is created by Aditya Sharma,')
print('enjoy the game, pass ur time')
print('======================================')
print('Rules are as usual of this game, but uh get to play first!')
print('numbers allowed: 0-6 only')
print('If you win, your score will be added,')
print('else will be deducted from your current score')
print('================================================')

while True:
   print('Enter (1) to Login')
   print('Enter (2) to Register')
   print('Enter (3) to View all Scores')
   try:
      cont=int(input('>'))
      if cont == 1 or cont == 2 or cont == 3:
         break
      print('only numbers (1, 2 & 3) allowed')
   except:
      print('only numbers (1, 2 & 3) allowed')

def gameRegis(Id_List):
   print('UserId and password cannot be retrived, so save it 
somewhere')
   while True:
      while True:
         print('Choose a userID of your choice except: ', Id_List)
         #for i in reserved:
         #    print(i)
         try:
            newId= int(input('UserId> '))
            if newId in Id_List:
               print('already taken, choose another')
            elif newId == 0:
               print("cannot take '0' as UserId")
            else:
               break
         except:
            print('only numbers allowed')
      while True:
         try:
            name=input('Enter your name: ')
            newPass=int(input('Enter a password: '))
            query="insert into store (User_Id, Name, Score, password) values( %s , %s, 0, %s );"
            new=[(newId, name, newPass)]
            sql.executemany(query, new)
            db.commit()
            break
         except:
            print('only numbers allowed')
      break

   print('Registration Success...')
   print('Now Login to continue')

def gameLogin(Id_List, Pass_List):
   #remove comment from the next to view corresponding saved Ids with Passwords
   #print(Id_List, Pass_List)
   while True:
      try:
         while True:

            while True:
               #check if login id exists
               try:
                    Id=int(input('Enter your User_Id: '))
                    if Id == 0:
                        print('User Not Found')
                    elif Id_List.index(Id) > 0:
                        a=Id_List.index(Id)
                        break
                    else:
                        print('UserId not found')
               except:
                    print('User Id not found')
                    print('Try again')
            #pasword check
            Pass=int(input('Enter your Password :'))
            if Pass == Pass_List[a]:
               break
            else:
               print('If you forgot you password/userId, then')
               print('then register again by re-lauunching the
game')
               print('wrong creadentials')
         break
      except:
         print('only numbers allowed')
         print('Try Again...')

   user = Id
   nScore = mScore[a]
   name = namee[a]
   print('Login Success...')
   print('Welcome ', name, ', your current score is: ', nScore,
sep='')
```

```
    db.commit()
    return user, nScore



if cont == 2:
    gameRegis(reserved)

    #get db values
    sql.execute('select User_Id from store;')
    res = sql.fetchall()
    reserved = []
    for i in res:
        for j in i:
            reserved.append(j)

    sql.execute('select name from store;')
    namee = []
    nam=sql.fetchall()
    for i in nam:
        for j in i:
            namee.append(j)

    sql.execute('select Score from store;')
    mScore = []
    sco=sql.fetchall()
    for i in sco:
        for j in i:
            mScore.append(j)

    sql.execute('select password from store;')
    passList = []
    passL=sql.fetchall()
    for i in passL:
        for j in i:
            passList.append(j)

    User, nScore = gameLogin(reserved, passList)

if cont == 1:
    User, nScore = gameLogin(reserved, passList)

if cont == 3:
    sql.execute('select Name, Score from store;')
    print('*Name*', ' , ', '*Score*')
    fScore = sql.fetchall()
    for i in fScore:
        print(i)
    Quit=input('Press Enter-Key to exit')
    db.close()
    exit()

#game on...

print('Game Starts here...')

while(True):

    #user's turn...

    try:
        user_num=int(input('Enter ur num: '))
    except:
        print('Enter a number only, in range 0 to 6')

    else:

        comp_num=random.randrange(1, 7)

        if(user_num==comp_num):
            print('Computer: ', comp_num)
            print('Both of you had same numbers out!')
            print('ur chance ends...')
            print('Your total score in ur turn was: ', user_score)

            break

        else:
            if(user_num<7):
                print('Computer: ', comp_num)
                print('Your total score after this round:')
                user_score= user_score+user_num
                print(user_score)

            else:
                    print("Your number was out of range, try again")

print("Now it's Computer's turn to score")

while(True):

    #computer's turn...
    comp_num=random.randrange(1, 7)

    try:
        user_num=int(input('Enter ur num: '))

    except:
        print('Enter a number only, in range 0 to 6')

    else:

        if(user_num==comp_num):
            print('Computer: ', comp_num)
            print('Both of you had same numbers out!')
            print("Computer's chance ends...")
            print("Computer's score in this game was: ", comp_score)

            break

        else:
            if(user_num<7):
                print('Computer: ', comp_num)
                print("Computer's score after this round:")
                comp_score= comp_score+comp_num
                print(comp_score)

            else:
                print("Your number was out of range, try again")

#score calculation...
```

```
if(comp_score>user_score):
    win_score = comp_score - user_score
    print('OPPS...')
    print("Computer wins by ", win_score, 'point(s)')
    print('You ', "lost the game")
    final_score= 0 - user_score

elif(comp_score<user_score):
    win_score = user_score-comp_score
    print('Congrats')
    print('You ', 'won by ', win_score, ' point(s)')
    print("Computer lost the game")
    final_score= user_score

else:
    print('The results cannot be calculated...')
    print('This match is a Tie')
    final_score= nScore

print('Thank You for using our service, hope u enjoyed...')


query='update store set Score = (Score + %s) where User_Id =
%s;'
var=(final_score, User)
sql.execute(query, var)
sql.execute('select Score from store;')
sco1=sql.fetchall()
for i in sco1:
    for j in i:
```

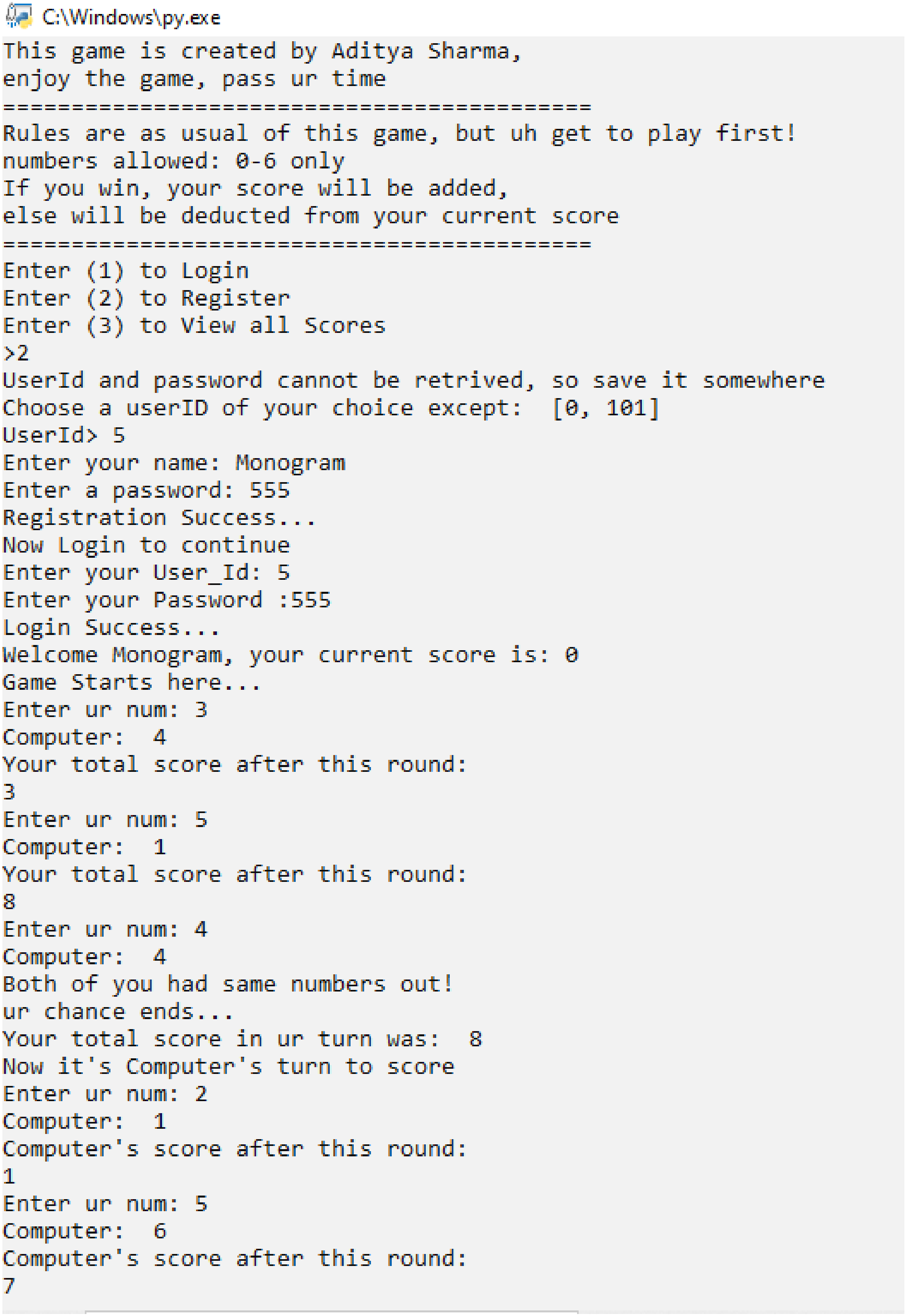
```
    mScore1.append(j)
nScore=mScore1[reserved.index(User)]
db.commit()


print('Your Game Score was saved and updated successfully...')
print('Current Score, ', nScore)

#exit
db.close()
Quit=input("PRESS ENTER TO EXIT THE GAME")
```

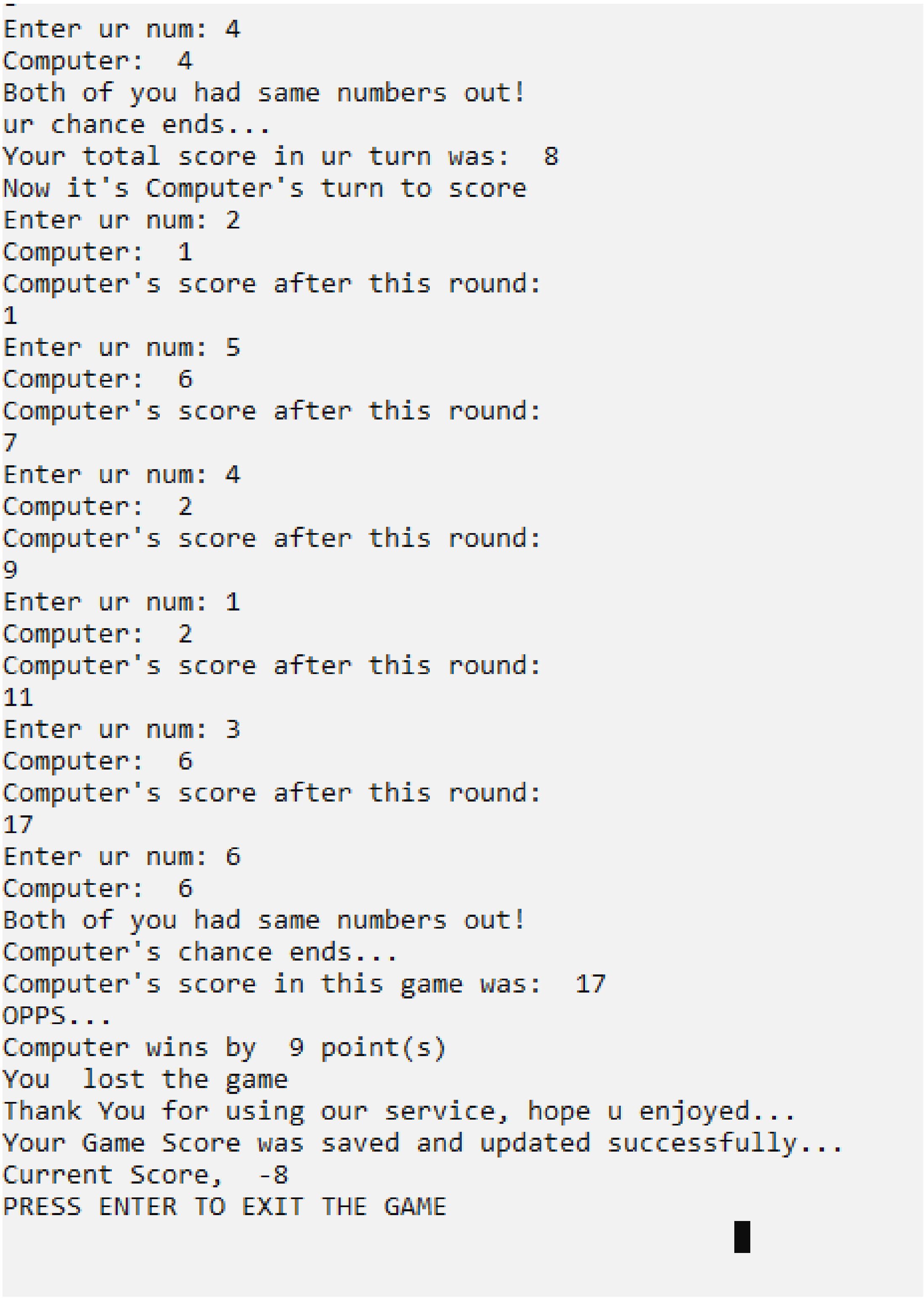
# Program Output

## 1.



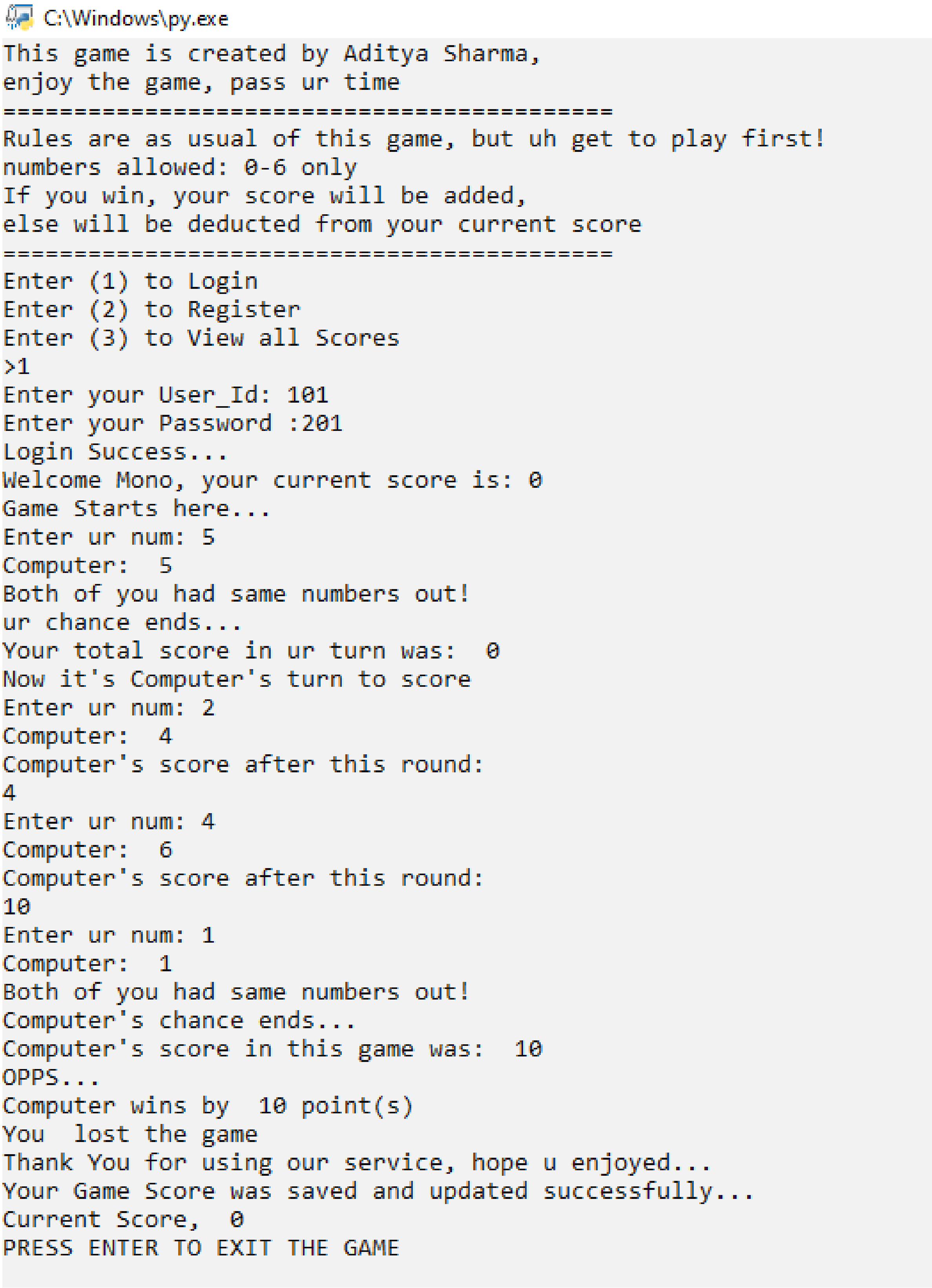
C:\Windows\py.exe

```
This game is created by Aditya Sharma,
enjoy the game, pass ur time
===========================================
Rules are as usual of this game, but uh get to play first!
numbers allowed: 0-6 only
If you win, your score will be added,
else will be deducted from your current score
===========================================
Enter (1) to Login
Enter (2) to Register
Enter (3) to View all Scores
>2
UserId and password cannot be retrived, so save it somewhere
Choose a userID of your choice except:  [0, 101]
UserId> 5
Enter your name: Monogram
Enter a password: 555
Registration Success...
Now Login to continue
Enter your User_Id: 5
Enter your Password :555
Login Success...
Welcome Monogram, your current score is: 0
Game Starts here...
Enter ur num: 3
Computer:  4
Your total score after this round:
3
Enter ur num: 5
Computer:  1
Your total score after this round:
8
Enter ur num: 4
Computer:  4
Both of you had same numbers out!
ur chance ends...
Your total score in ur turn was:  8
Now it's Computer's turn to score
Enter ur num: 2
Computer:  1
Computer's score after this round:
1
Enter ur num: 5
Computer:  6
Computer's score after this round:
7
```



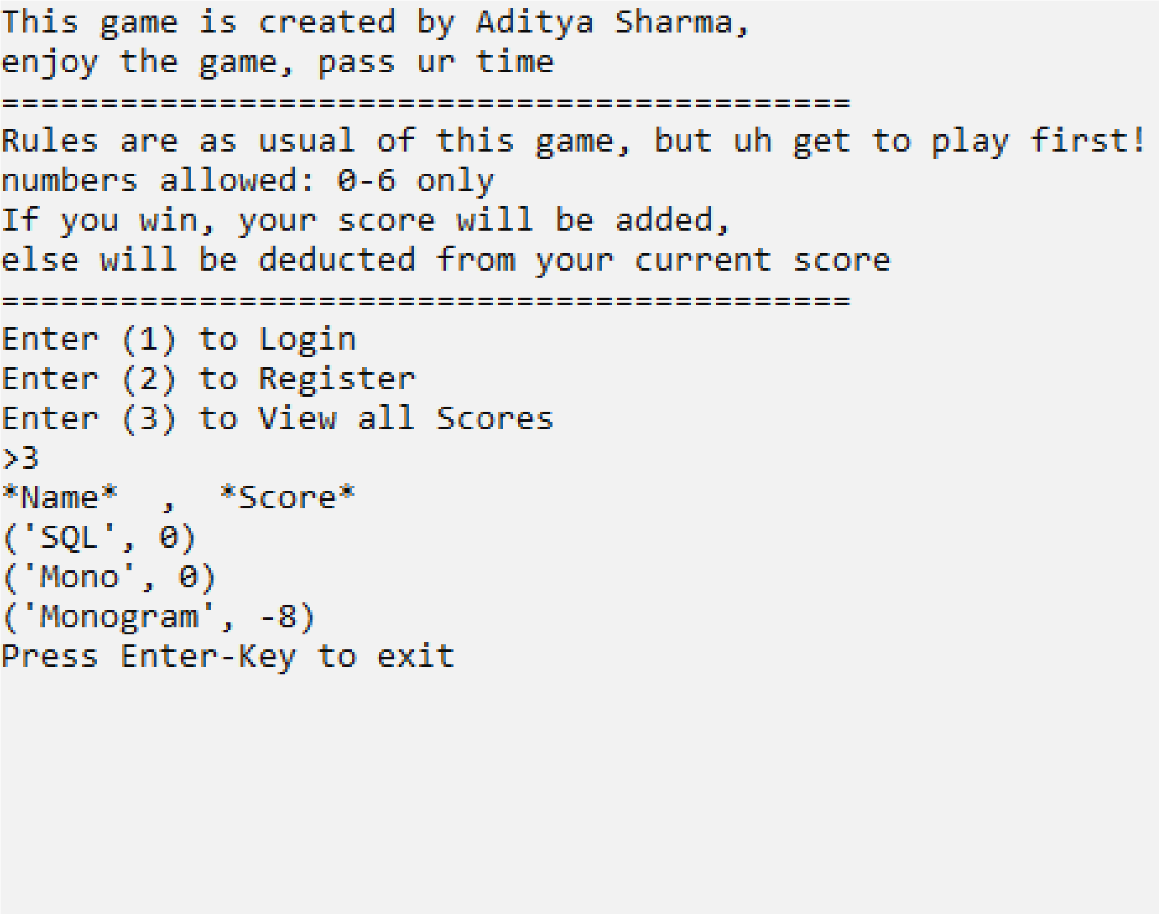
```
Enter ur num: 4
Computer:  4
Both of you had same numbers out!
ur chance ends...
Your total score in ur turn was:  8
Now it's Computer's turn to score
Enter ur num: 2
Computer:  1
Computer's score after this round:
1
Enter ur num: 5
Computer:  6
Computer's score after this round:
7
Enter ur num: 4
Computer:  2
Computer's score after this round:
9
Enter ur num: 1
Computer:  2
Computer's score after this round:
11
Enter ur num: 3
Computer:  6
Computer's score after this round:
17
Enter ur num: 6
Computer:  6
Both of you had same numbers out!
Computer's chance ends...
Computer's score in this game was:  17
OPPS...
Computer wins by  9 point(s)
You  lost the game
Thank You for using our service, hope u enjoyed...
Your Game Score was saved and updated successfully...
Current Score,  -8
PRESS ENTER TO EXIT THE GAME
```

**2.**



```
This game is created by Aditya Sharma,
enjoy the game, pass ur time
===========================================
Rules are as usual of this game, but uh get to play first!
numbers allowed: 0-6 only
If you win, your score will be added,
else will be deducted from your current score
===========================================
Enter (1) to Login
Enter (2) to Register
Enter (3) to View all Scores
>1
Enter your User_Id: 101
Enter your Password :201
Login Success...
Welcome Mono, your current score is: 0
Game Starts here...
Enter ur num: 5
Computer:  5
Both of you had same numbers out!
ur chance ends...
Your total score in ur turn was:  0
Now it's Computer's turn to score
Enter ur num: 2
Computer:  4
Computer's score after this round:
4
Enter ur num: 4
Computer:  6
Computer's score after this round:
10
Enter ur num: 1
Computer:  1
Both of you had same numbers out!
Computer's chance ends...
Computer's score in this game was:  10
OPPS...
Computer wins by  10 point(s)
You  lost the game
Thank You for using our service, hope u enjoyed...
Your Game Score was saved and updated successfully...
Current Score,  0
PRESS ENTER TO EXIT THE GAME
```

**3.**



```
This game is created by Aditya Sharma,
enjoy the game, pass ur time
===========================================
Rules are as usual of this game, but uh get to play first!
numbers allowed: 0-6 only
If you win, your score will be added,
else will be deducted from your current score
===========================================
Enter (1) to Login
Enter (2) to Register
Enter (3) to View all Scores
>3
*Name*  ,  *Score*
('SQL', 0)
('Mono', 0)
('Monogram', -8)
Press Enter-Key to exit
```

## Limitations

### (a) Advantages:

- ➢It is a simple game
- ➢Does not require internet connection
- ➢Exceptions handled so no runtime errors are expected to be encountered
- ➢Scores are saved
- ➢Can be played by all family members
- ➢Person of any age group can play

### (b) Disadvantages:

- ➢If user forgets his/her credential, then have to create a new fresh Id
- ➢Lost password/User_Id cannot be restored
- ➢Can be addictive
- ➢No back button present

### (c) Conclusion:

This is a basic python based game which & update the values stored there using the 'User_Id' of the user. Like all games, this is also a good one if used for limited time only else can be addictive. Game is expected not to crash while running. Overall this game is good.

# Bibliography

- Wikipedia
- dev.mysql.com
- geeksforgeeks.org
- python.org
- GitHub