PYTHON PORTFOLIO

ANDREAS CALLEJA

SOURCE CODE ON GITHUB:

https://github.com/andreasmalta1?tab=repositories

LINKEDIN PROFILE:

https://www.linkedin.com/in/andreascalleja/

Certificate

OF ACHIEVEMENT

Andreas Calleja

has successfully completed the following course:

PYTHON FOUNDATIONS

ISSUED ON 01/06/2021 **EDUCATION LICENSE NO.** 2011-TC-010

NIKOLAI SAMMUT
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National Commission for Further and Higher Education Malta

CONTENTS

NETFLIX

- Description:
  - A program that receives your Netflix viewing activity as a csv file and computes the time spent watching Netflix and when.
  - User can search for each show/movie.
- Functionality used:
  - Pandas, numpy, matplotlib, time, tzlocal modules
- GitHub Link:
  - https://github.com/andreasmalta1/netflix-python

NETFLIX

MENU

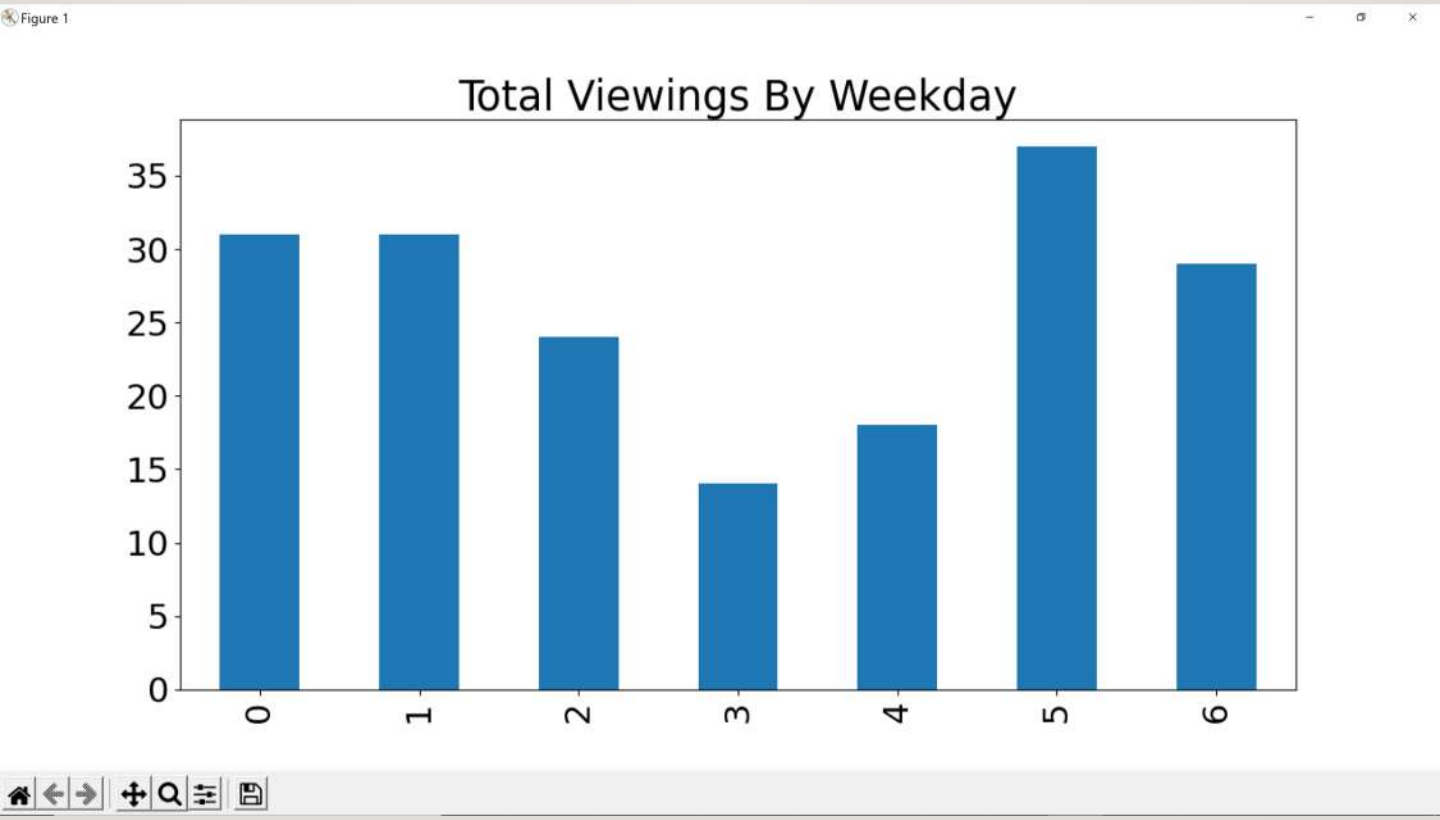
```
----MENU-----
1. View total time spent
2. View by day
3. View by hour
4. View by show
5. Exit
Choice:
```

VIEWING TIME

```
Choice: 1
Total Time spent on Netflix is 2 days 17:17:07
```

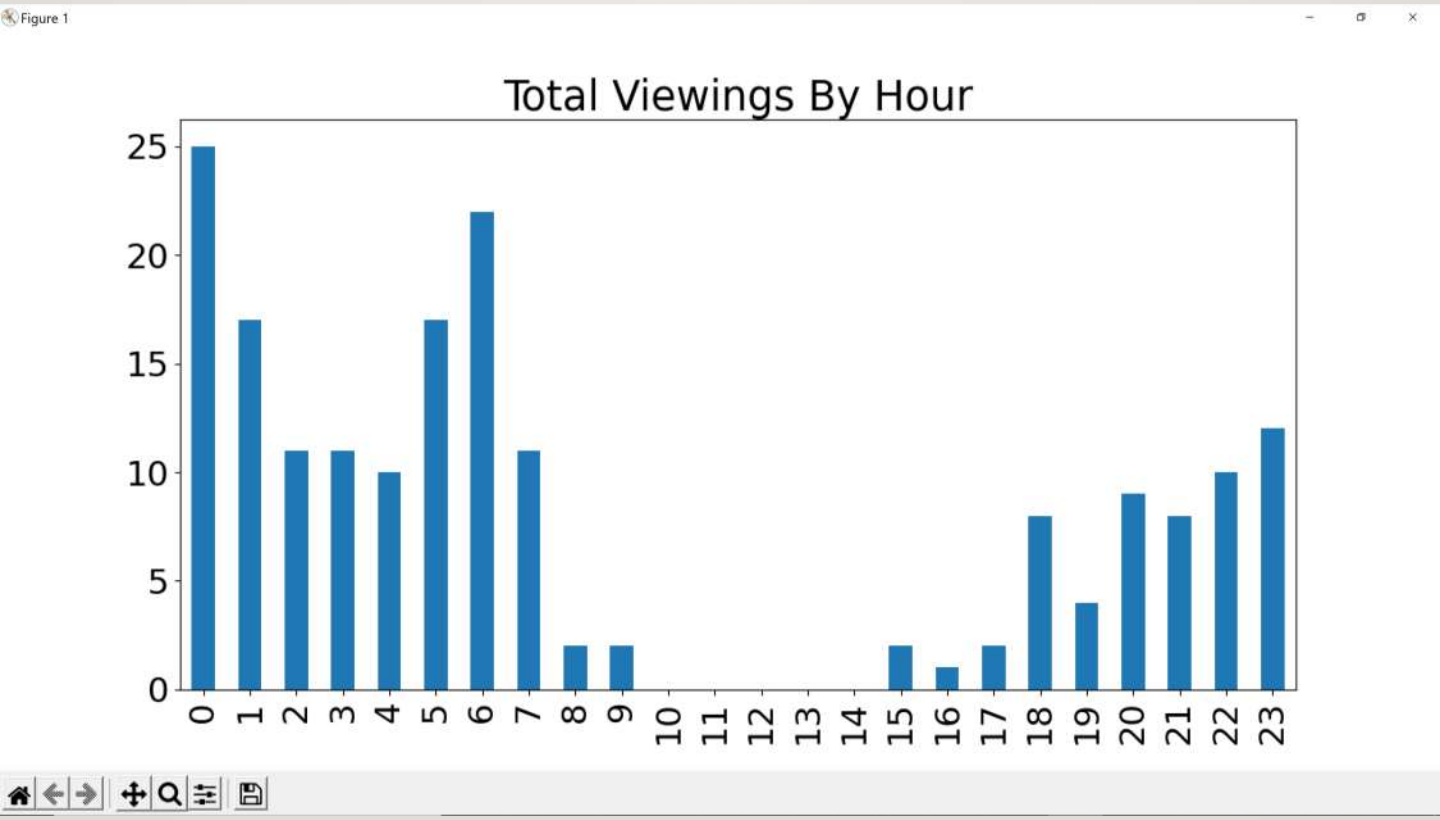
NETFLIX

VIEWINGS BY DAY



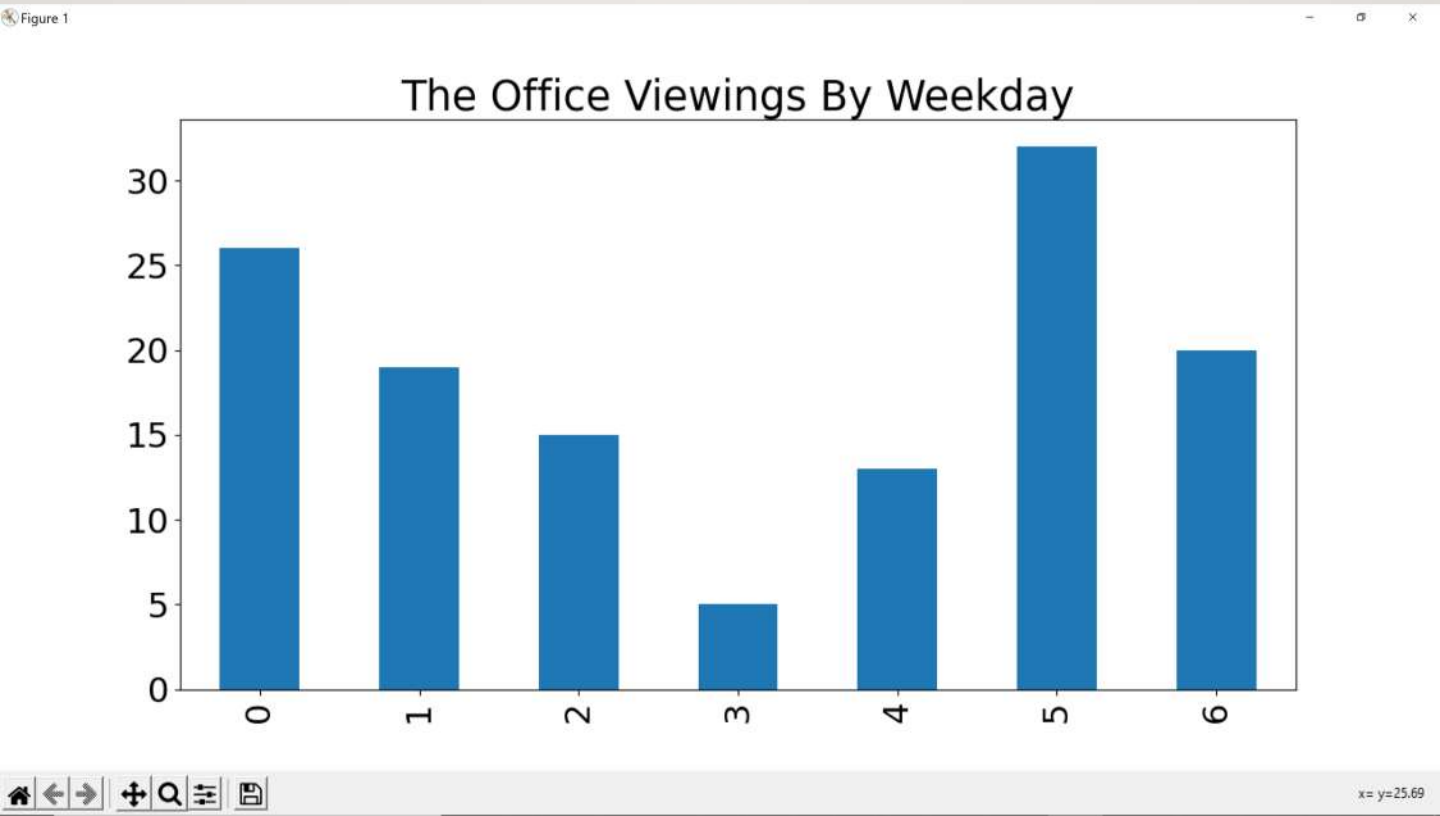
NETFLIX

VIEWINGS BY HOUR



NETFLIX

THE OFFICE VIEWINGS BY DAY



RETRO COLLECTION - PYQT

- Description:
  - A retro collection database.
  - Allows user to set up name during first time boot-up in a login page.
  - User can add, delete or edit items and add to the item types.
- Functionality used:
  - PyQt5
  - Working with .json files
- GitHub Link:
  - https://github.com/andreasmalta1/python-retrocollection

RETRO COLLECTION - PYQT

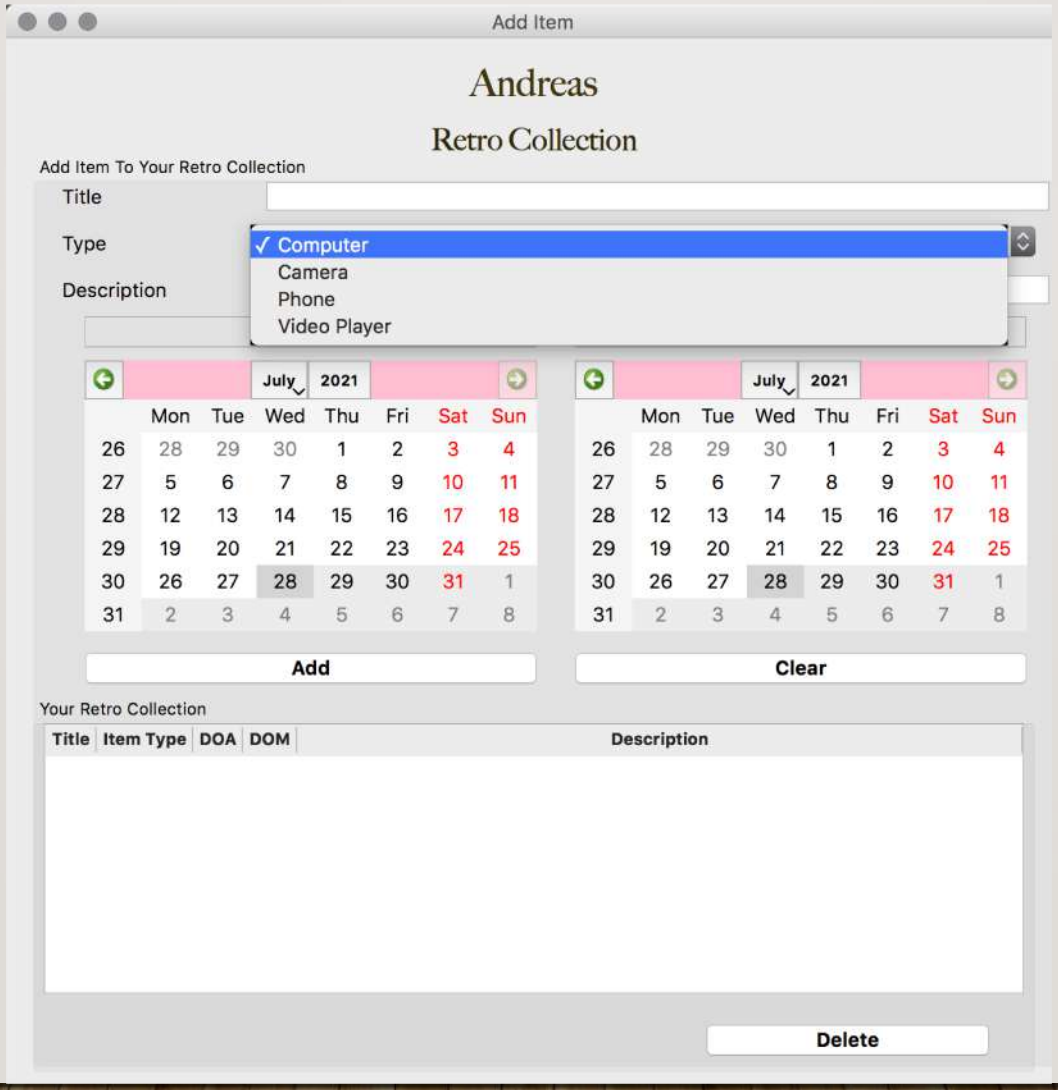
BOOT UP LOGIN PAGE

RETRO COLLECTION - PYQT

MENU PAGE

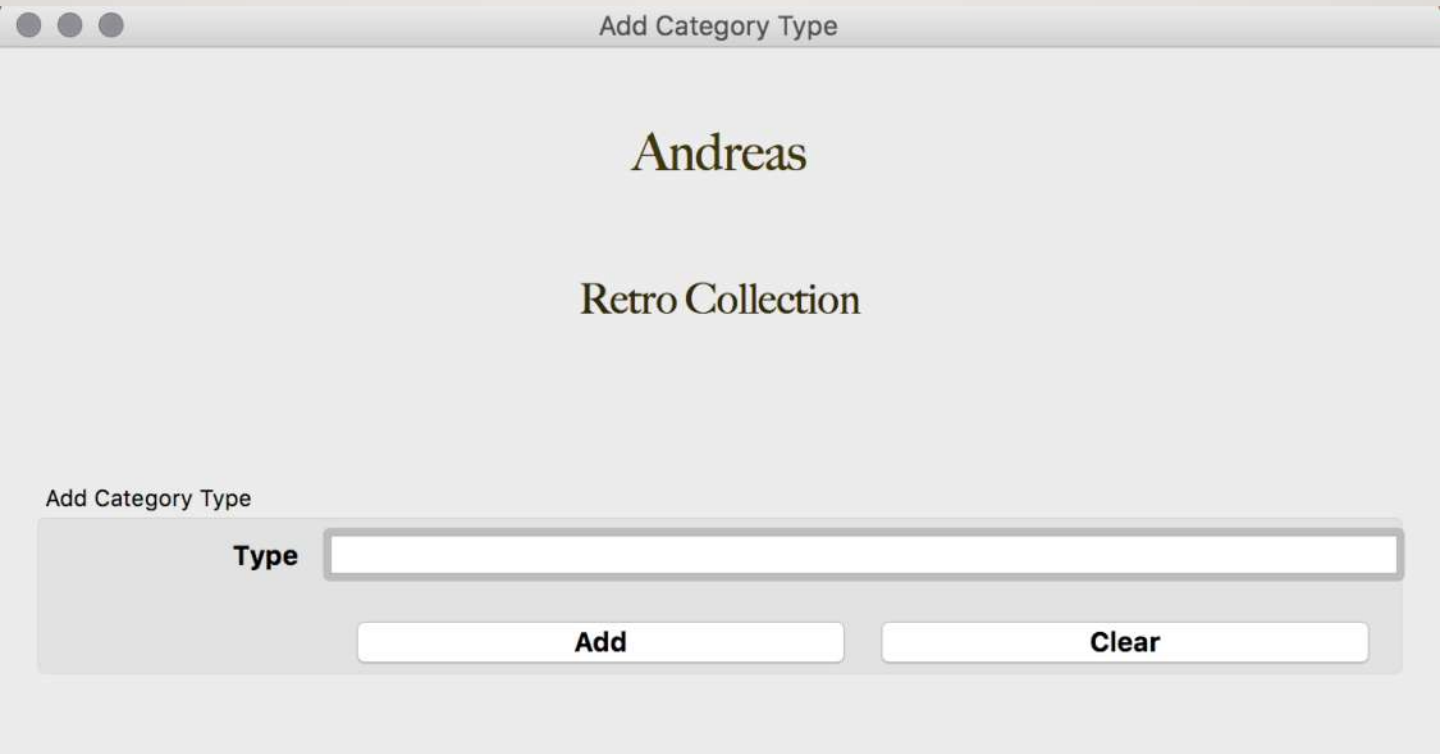
RETRO COLLECTION - PYQT

ADDING ITEMS TO DATABASE



RETRO COLLECTION - PYQT

ADDING TO THE ITEM TYPES



SUDOKU SOLVER

- Description:
  - Solves any solvable sudoku problem through recursion
- Functionality used:
  - Recursion
- GitHub Link:
  - https://github.com/andreasmalta1/sudoku-python

SUDOKU SOLVER

SUDOKU PROBLEM

```
example_board = [
    [6, -1, -1, -1, -1, 5, -1, -1, -1],
    [-1, -1, -1, 3, -1, 9, -1, 5, -1],
    [-1, -1, -1, -1, 4, -1, -1, 6, -1],

    [4, -1, 3, -1, -1, -1, -1, -1, -1],
    [-1, 8, -1, 7, -1, -1, 2, -1, -1],
    [-1, -1, -1, -1, -1, 1, 7, -1, -1],

    [-1, -1, -1, -1, 9, -1, -1, -1, 6],
    [-1, -1, 5, -1, 2, -1, 8, 4, 9],
    [-1, 4, -1, -1, -1, 3, -1, -1, -1]
```

SUDOKU SOLVER

SOLUTION

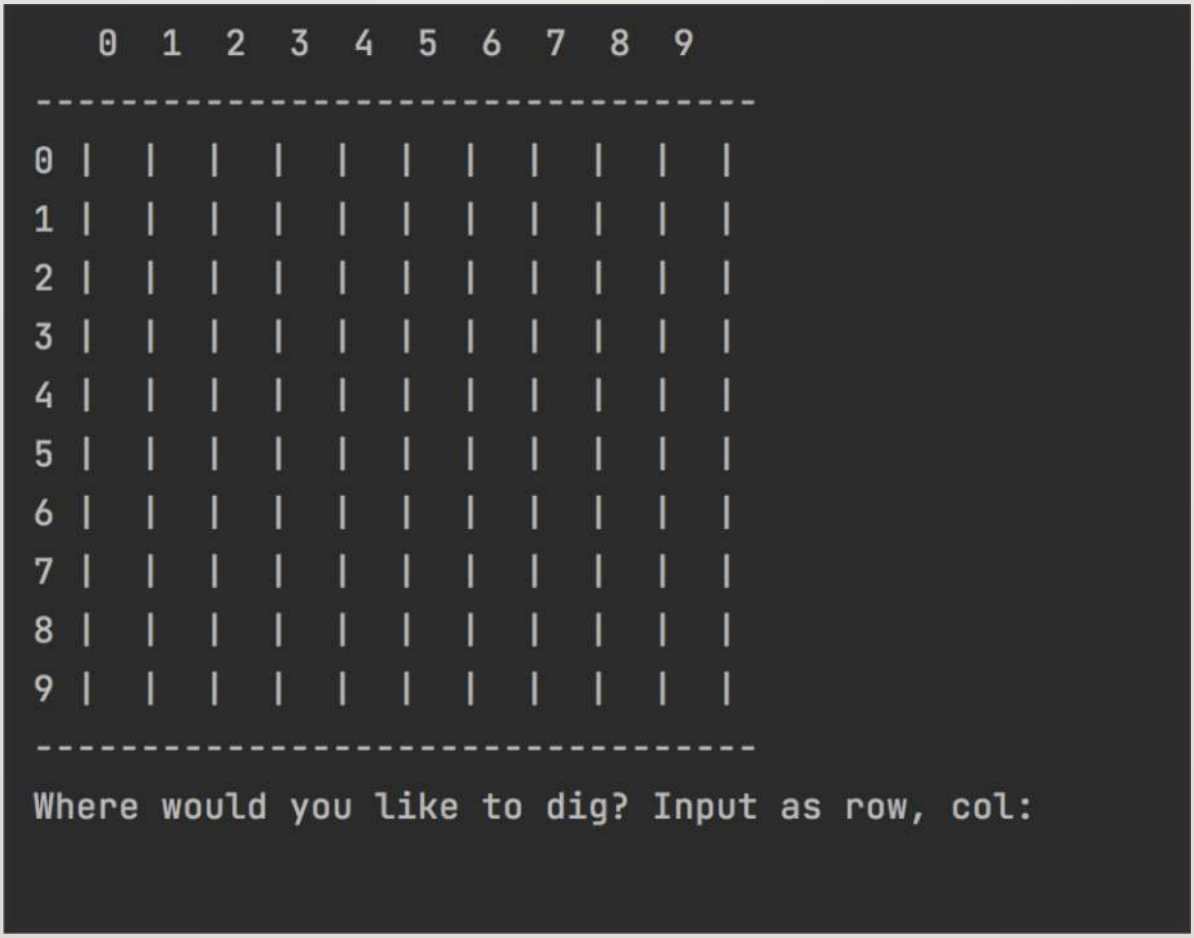
```
6 9 4 | 1 7 5 | 3 2 8
8 1 2 | 3 6 9 | 4 5 7
3 5 7 | 2 4 8 | 9 6 1
---------------------
4 7 3 | 9 8 2 | 6 1 5
5 8 1 | 7 3 6 | 2 9 4
2 6 9 | 4 5 1 | 7 8 3
---------------------
7 2 8 | 5 9 4 | 1 3 6
1 3 5 | 6 2 7 | 8 4 9
9 4 6 | 8 1 3 | 5 7 2
---------------------
```

MINESWEEPER

- Description:
  - A CLI version of the classic game minesweeper
- Functionality used:
  - Random and re modules
- GitHub Link:
  - https://github.com/andreasmalta1/python-minesweeper

MINESWEEPER

GAMEPLAY



MINESWEEPER

GAMEPLAY

```
Where would you like to dig? Input as row, col: 9,9
   0  1  2  3  4  5  6  7  8  9
---------------------------------
0 |  |  |  |  |  |  |  |  |  |  |
1 |  |  |  |  |  |  |  |  |  |  |
2 |  |  |  |  |  |  |1 |1 |2 |2 |
3 |  |  |  |  |  |  |1 |0 |0 |0 |
4 |  |  |  |  |  |2 |1 |0 |0 |0 |
5 |  |2 |1 |1 |1 |1 |0 |0 |0 |0 |
6 |  |1 |0 |0 |0 |0 |0 |0 |0 |0 |
7 |1 |1 |0 |0 |1 |1 |1 |0 |0 |0 |
8 |0 |0 |0 |0 |1 |  |1 |0 |0 |0 |
9 |0 |0 |0 |0 |1 |  |1 |0 |0 |0 |
---------------------------------
Where would you like to dig? Input as row, col:
```

MINESWEEPER

GAME OVER

```
Where would you like to dig? Input as row, col: 4,4
Game over
   0  1  2  3  4  5  6  7  8  9
---------------------------------
0 |0 |0 |1 |* |2 |* |1 |1 |2 |2 |
1 |0 |0 |1 |1 |2 |1 |1 |1 |* |* |
2 |1 |1 |0 |0 |1 |1 |1 |1 |2 |2 |
3 |* |2 |1 |1 |2 |* |1 |0 |0 |0 |
4 |2 |* |1 |1 |* |2 |1 |0 |0 |0 |
5 |2 |2 |1 |1 |1 |1 |0 |0 |0 |0 |
6 |* |1 |0 |0 |0 |0 |0 |0 |0 |0 |
7 |1 |1 |0 |0 |1 |1 |1 |0 |0 |0 |
8 |0 |0 |0 |0 |1 |* |1 |0 |0 |0 |
9 |0 |0 |0 |0 |1 |1 |1 |0 |0 |0 |
---------------------------------
```

HANGMAN

- Description:
  - The ever popular hangman game
- Functionality used:
  - Random and string modules
- Github Link:
  - https://github.com/andreasmalta1/python-hangman

HANGMAN

GAMEPLAY

```
You have 3 lives left. You have used these letter:  E A G T I R S N O
Current word:  S T R E N G T - E N
Guess a letter: H
Congrats, you guessed STRENGTHEN
```

TIC TAC TOE

- Description:
  - A game of tic tac toe that can be played between 2 humans, a human and the computer playing at random or against an unbeatable computer
- Functionality used:
  - Math, random & time module
  - Recursion
- GitHub Link:
  - https://github.com/andreasmalta1/python-tictactoe

TIC TAC TOE

GAME LAYOUT

```
| 0 | 1 | 2 |
| 3 | 4 | 5 |
| 6 | 7 | 8 |
```

X WINS !!!

```
X makes a move to square 6
| X |   | O |
| X |   | O |
| X |   |   |

X wins!
```

ROCK PAPER SCISSORS

- Description:
  - The all time classic rock, paper scissors in CLI against a random computer
- Functionality used:
  - Random module
- GitHub Link:
  - https://github.com/andreasmalta1/python-rockpaperscissors

ROCK PAPER SCISSORS

GAMEPLAY

```
Type 'r' for rock, 'p' for paper, 's': r
It's a tie
```

```
Type 'r' for rock, 'p' for paper, 's': r
You won
```

GUESS GAME

- Description:
  - A high or low guessing game which can be played either with the user guessing a random generated number or with the computer guessing a user selected number
- Functionality used:
  - Random module
- GitHub Link:
  - https://github.com/andreasmalta1/python-guessgame

GUESS GAME

COMPUTER GUESSING A USER SELECTED NUMBER

```
Is 104 too high (H), too low (L) or correct (C)?: L
Is 931 too high (H), too low (L) or correct (C)?: H
Is 326 too high (H), too low (L) or correct (C)?: H
Is 264 too high (H), too low (L) or correct (C)?: H
Is 230 too high (H), too low (L) or correct (C)?: H
Is 105 too high (H), too low (L) or correct (C)?: L
Is 181 too high (H), too low (L) or correct (C)?: L
Is 185 too high (H), too low (L) or correct (C)?: C
Computer guessed 185
```

GUESS GAME

USER GUESSING A RANDOM GENERATED NUMBER

```
Guess a number between 1 and 100: 90
Too high
Guess a number between 1 and 100: 50
Too high
Guess a number between 1 and 100: 30
Too high
Guess a number between 1 and 100: 10
Too low
Guess a number between 1 and 100: 15
Too low
Guess a number between 1 and 100: 20
Too low
Guess a number between 1 and 100: 25
Too low
Guess a number between 1 and 100: 28
Too high
Guess a number between 1 and 100: 27
You guessed the number 27 correctly
```

BINARY SEARCH

- Description:
  - A program that proves how much faster it is to perform a binary search rather than a normal search
  - A binary search works by constantly dividing the search list in half until you arrive to the final location
- Functionality used:
  - Random & time module
  - Binary search
- GitHub Link:
  - https://github.com/andreasmalta1/python-binarysearch

BINARY SEARCH

FINDING THE TARGET IN A RANDOM LIST

```
Naive search time:  3.3418698310852O5 seconds
Binary search time:  0.062696218490600S9 seconds
```

ATM MACHINE SIMULATOR

- Description:
  - ATM Machine simulator
  - Menu allowing user to add new account, withdraw/deposit/check & funds
- Functionality used:
  - Time & random modules
  - Classes
  - Random pins creation & verification
  - Error Handling
- GitHub Link:
  - https://github.com/andreasmalta1/python-atmmachine

ATM MACHINE SIMULATOR

MENU

```
WELCOME TO THE ATM
---------------
1. Add A New Account
2. Deposit Funds
3. Withdraw Funds
4. Check Balance
5. Exit ATM
Choice:
```

ADDING A NEW ACCOUNT

```
Choice: 1

Name: Andreas
Surname: Calleja
9971
This is your pin: 9971
Please memorise it...

WELCOME TO THE ATM
```

ATM MACHINE SIMULATOR

DEPOSIT

```
Choice: 2

Please enter your pin: 9971
Welcome Andreas Calleja
This is your current balance: €0.00
How much money would you like to deposit: €100
Please enter €100.00 into the machine...
Your new balance is now: €100.00
```

INVALID PIN

```
Please enter your pin: 9970
Invalid Pin
```

ERROR HANDLING

```
Please enter your pin: 9971
Welcome Andreas Calleja
This is your current balance: €100.00

How much money would you like to withdraw: €120
You have insufficient money in your account
Please decrease the amount of money you would like to withdraw
```

ATM MACHINE SIMULATOR

WITHDRAW

```
How much money would you like to withdraw: €60
Please take your €60.00 from the machine...
Your new balance is now: €40.00
```

ACCOUNT BALANCE

```
Please enter your pin: 9971
Welcome Andreas Calleja
This is your current balance: €40.00
```

OLYMPIC TURTLE

- Description:
  - Draw the Olympic flag using the Turtle module
- Functionality used:
  - Turtle and time modules
- GitHub Link:
  - https://github.com/andreasmalta1/python-olympicturtle

OLYMPIC TURTLE

OLYMPIC LOGO