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11/11/2023

SDEV 300 / 7381

Lab 4

This program is being tested to catch invalid data and appropriately handle user input correctly, while also getting more experience using numpy and regex. This program passes all tests and performs as designed. Using numpy made the use of matrices much easier and using regex to validate data format proves to be a very useful and code efficient method. I did not use pandas in this code, though I did experiment with it separately and look forward to having a useful case to implement it. Throughout the labs for this class, I have become more comfortable using loops for menus and for input to make programs more user friendly. I made a point to break up as many code blocks as I could and opted for extra functions which is overall better practice. My Pylint score was a 10/10, so no issues there this week.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test** | **Input** | **Expected Output** | **Actual Output** | **Pass?** |
| **1** | n | “Do you want to play Matrix Game” “Thanks for using…” | “Do you want to play Matrix Game” “Thanks for using…” | Yes |
| **2** | y, 222-3333-333, 222-333-3333, 111111111, 11111-1111, 12 3 4 5 6 7 8 9, 1 2 3 4 5 6 7 8 9, 1 3 5 7 9 2 4 6 8, 1, 5, n | “Do you want to play Matrix Game” “Enter a phone number” “Invalid, try again” “Enter a zip code”, “Invalid try again”, “Enter 3x3 matrix”, “Invalid try again”, “Enter next matrix” , Matrix A is:  1 2 3  4 5 6  7 8 9  Matrix B is:  1 3 5  7 9 2  4 6 8 “Select opertation”, The addition of Matrix A and Matrix B is:  2 5 8  11 14 8  11 14 17  The Transpose is:  2 11 11  5 14 14  8 8 17  The mean of row 1 is 5.0  The mean of row 2 is 11.0  The mean of row 3 is 14.0  The mean of column 1 is 8.0  The mean of column 2 is 11.0  The mean of column 3 is 11.0 “Continue playing?” “Thanks for using…” | “Do you want to play Matrix Game” “Enter a phone number” “Invalid, try again” “Enter a zip code”, “Invalid try again”, “Enter 3x3 matrix”, “Invalid try again”, “Enter next matrix” , Matrix A is:  1 2 3  4 5 6  7 8 9  Matrix B is:  1 3 5  7 9 2  4 6 8 “Select opertation”, The addition of Matrix A and Matrix B is:  2 5 8  11 14 8  11 14 17  The Transpose is:  2 11 11  5 14 14  8 8 17  The mean of row 1 is 5.0  The mean of row 2 is 11.0  The mean of row 3 is 14.0  The mean of column 1 is 8.0  The mean of column 2 is 11.0  The mean of column 3 is 11.0 “Continue playing?” “Thanks for using…” | Yes |
| **3** | y, 222-222-2222, 33333-3213, 1 0 1 2 3 2 4 6 5, 8 9 7 6 8 5 3 2 0, 2, 3, 5, n | “Play Game?”, “Enter Phone number”, “Enter zip code”, “Enter Matrix”, “Enter next matrix”, Display matrices, “Select operation”, The subtraction of Matrix A and Matrix B is:  -7 -9 -6  -4 -5 -3  1 4 5  The Transpose is:  -7 -4 1  -9 -5 4  -6 -3 5  The mean of row 1 is -7.33  The mean of row 2 is -4.0  The mean of row 3 is 3.33  The mean of column 1 is -3.33  The mean of column 2 is -3.33  The mean of column 3 is -1.33, “Select operation”, The product of Matrix A and Matrix B is:  11 11 7  40 46 29  83 94 58  The Transpose is:  11 40 83  11 46 94  7 29 58  The mean of row 1 is 9.67  The mean of row 2 is 38.33  The mean of row 3 is 78.33  The mean of column 1 is 44.67  The mean of column 2 is 50.33  The mean of column 3 is 31.33, “Thanks for using” | “Play Game?”, “Enter Phone number”, “Enter zip code”, “Enter Matrix”, “Enter next matrix”, Display matrices, “Select operation”, The subtraction of Matrix A and Matrix B is:  -7 -9 -6  -4 -5 -3  1 4 5  The Transpose is:  -7 -4 1  -9 -5 4  -6 -3 5  The mean of row 1 is -7.33  The mean of row 2 is -4.0  The mean of row 3 is 3.33  The mean of column 1 is -3.33  The mean of column 2 is -3.33  The mean of column 3 is -1.33, “Select operation”, The product of Matrix A and Matrix B is:  11 11 7  40 46 29  83 94 58  The Transpose is:  11 40 83  11 46 94  7 29 58  The mean of row 1 is 9.67  The mean of row 2 is 38.33  The mean of row 3 is 78.33  The mean of column 1 is 44.67  The mean of column 2 is 50.33  The mean of column 3 is 31.33, “Thanks for using” | Yes |
| **4** | y, 121-454-6789, 18900-7890, 3 2 6 7 8 9 5 4 1, 2 4 7 9 3 6 1 2 1, 4, 5, n | “Play Game?”, “Enter phone number”, “Enter zip”, “Enter Matrix”, “Enter next matrix”, Display matrices, “Select operation”, The element by element product of Matrix A and Matrix B is:  6 8 42  63 24 54  5 8 1  The Transpose is:  6 63 5  8 24 8  42 54 1  The mean of row 1 is 18.67  The mean of row 2 is 47.0  The mean of row 3 is 4.67  The mean of column 1 is 24.67  The mean of column 2 is 13.33  The mean of column 3 is 32.33  “Select operation” “Thanks for using” | “Play Game?”, “Enter phone number”, “Enter zip”, “Enter Matrix”, “Enter next matrix”, Display matrices, “Select operation”, The element by element product of Matrix A and Matrix B is:  6 8 42  63 24 54  5 8 1  The Transpose is:  6 63 5  8 24 8  42 54 1  The mean of row 1 is 18.67  The mean of row 2 is 47.0  The mean of row 3 is 4.67  The mean of column 1 is 24.67  The mean of column 2 is 13.33  The mean of column 3 is 32.33  “Select operation” “Thanks for using” | Pass |

**Test 1:**

A computer screen shot of a computer screen

Description automatically generated

A computer screen shot of a computer program

Description automatically generated

**Test 2:**

A computer screen shot of a computer screen

Description automatically generated

A computer screen shot of a program

Description automatically generated

**Test 3:**

A computer screen shot of a computer program

Description automatically generated

A computer screen shot of a computer program

Description automatically generated

A computer screen shot of a program

Description automatically generated

**Test 4:**

A screenshot of a computer screen

Description automatically generated

A computer screen shot of a black screen

Description automatically generated

**Pylint:**

A computer screen shot of a black screen

Description automatically generated

|  |  |  |
| --- | --- | --- |
| **Password**  **Salted (y/n)** | **Hash** | **Did Crackstation Work?** |
| hey there (n) | 34b5c8d63228f33c33b76bc7e5309e328d719ddd2fed0f2b97e04b6bcbb82dedb7ee19f0b02b62a0a151c9844f1fb19560d3cdc81995839f63077a1dfc0a75d6 | Yes |
| THis1sAtoughP@ssw0Rd7 (n) | c28da75f1a3d265ffbac5ee1125eacb8 | No |
| thisisaneasierpassword12 (n) | d574cd4258e650345ec9ed92dd83bd29 | No |
| heyThere (y) | 96474b94d8e08960021305f18c78a768 | No |
| -h+\*a8Hiph#1eST6Th\_R (n) | eb95c525b282b90aad0a84284024587b | No |
| catchthiscode (n) | abfa0fcae8b0f6a3fcc8592466700730aa0a8cb0dff2562867fb8eb00ec274ac4ed2e80c36f9067dd9becc67b914475cb93c42be6ecb2de16460ac0e3e9a9509 | No |
| catchME (n) | 98e37fa27988be89dc8c56a91d648b59 | Yes |
| easy (y) | 8ed7ccad39ef53e8c7c4283a558c1395 | No |
| AstrongPassword1! | d7b83a2d9206201dd43dd2ae9c2595bf | No |
| AgoodPassword | 3972f88c6d53c51ab5952c7bd41f68fc | No |

This exercise for creating, encoding, and trying to crack passwords using Crackstation has been insightful to see what a strong password consists of. I tried many different variations of passwords, some as easy as, well, ‘easy’, and some as difficult as a Norton suggested code. What I found during this exercise was that Crackstation could only really break the easiest of passwords. Anything more complex than a few common words would make it unable to crack the hash. Any password that was salted, no matter how simple, was unable to be cracked. I found that creating strong passwords even in simple encryption (MD-5) created good security.