Changsha University of Science and Technology

School of Computer and Communications Engineering

Experiment Course for Python Programming

The first time-the 3rd Week

Course Name: Python Programming

Grade: 2021 Fall

Major: Computer Science and Technology

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Date: 22/03/2024

Experiment Course for Python Programming

The first time---the 3rd Week

(1) Programmer calculator

(Just for integer conversion) As a programmer, I often deal with binary numbers, decimal numbers, octal numbers and hexadecimal numbers. For example, convert decimal numbers to corresponding binary numbers, octal numbers, and hexadecimal numbers. This task requires writing Python code to convert the input decimal number into the corresponding binary number, octal number and hexadecimal number respectively. (tip: you can use bin (), oct () and hex () functions to implement)

Now----16:00pm

Paste your code here:

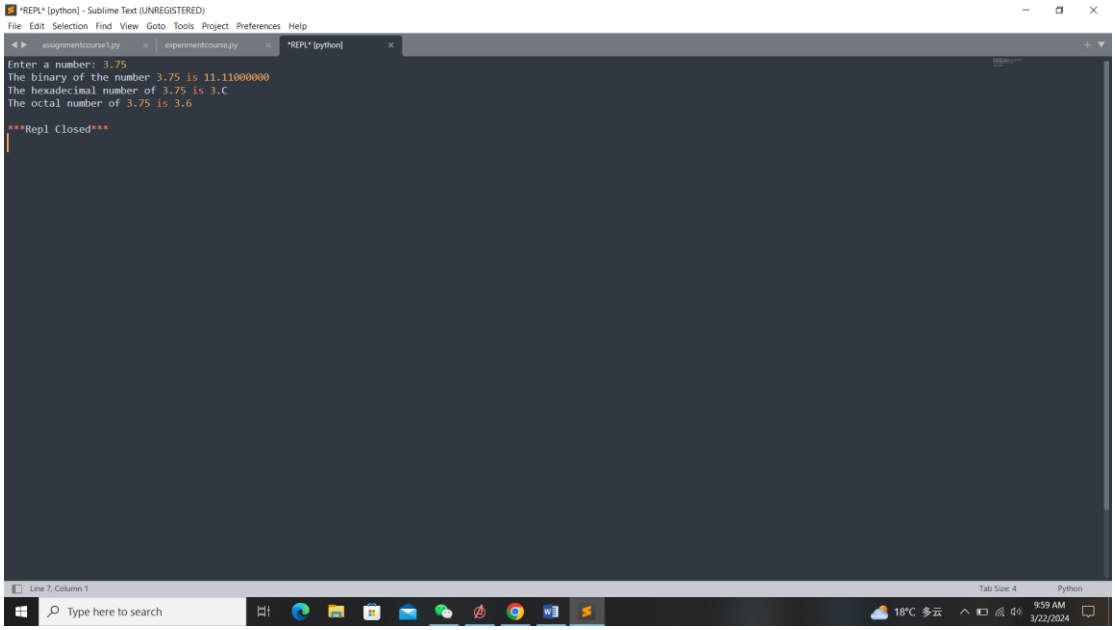
```python
conversion_table = {0: '0', 1: '1', 2: '2', 3: '3',  # Mapping of remainders to hexadecimal equivalent
                    4: '4', 5: '5', 6: '6', 7: '7',
                    8: '8', 9: '9', 10: 'A', 11: 'B',
                    12: 'C', 13: 'D', 14: 'E', 15: 'F'}


def decimalToHexadecimal(decimal):
    if decimal <= 0:
        return ''

    integer_part = int(decimal)
    decimal_part = decimal - int(decimal)

    integer_hex = ""
    decimal_hex = ""

    # Conversion of integer part to hexadecimal
    while integer_part > 0:
        remainder = integer_part % 16
        integer_hex = conversion_table[remainder] + integer_hex
        integer_part //= 16

    # Conversion of decimal part to hexadecimal
    while decimal_part > 0:
        decimal_part *= 16
        integer_part = int(decimal_part)
        decimal_hex += conversion_table[integer_part]
        decimal_part -= integer_part
```

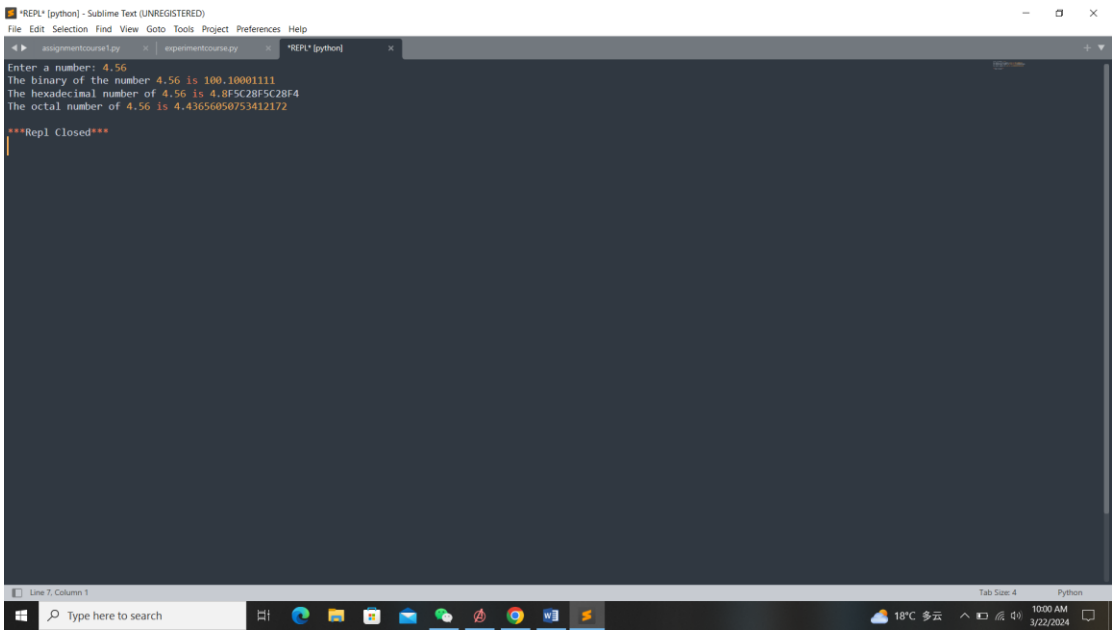
```python
        decimal_part -= integer_part

    if decimal_hex:
        return integer_hex + '.' + decimal_hex
    else:
        return integer_hex


def dec2bin(number: float):
    integer_part = int(number)
    decimal_part = number - int(number)

    ans = ""
    if integer_part == 0:
        return '0'

    # Conversion of integer part to binary
    while integer_part > 0:
        ans = str(integer_part % 2) + ans
        integer_part //= 2

    if decimal_part == 0:
        return ans
    else:
        ans += '.'

    # Conversion of decimal part to binary
    for i in range(8):
        decimal_part *= 2
```

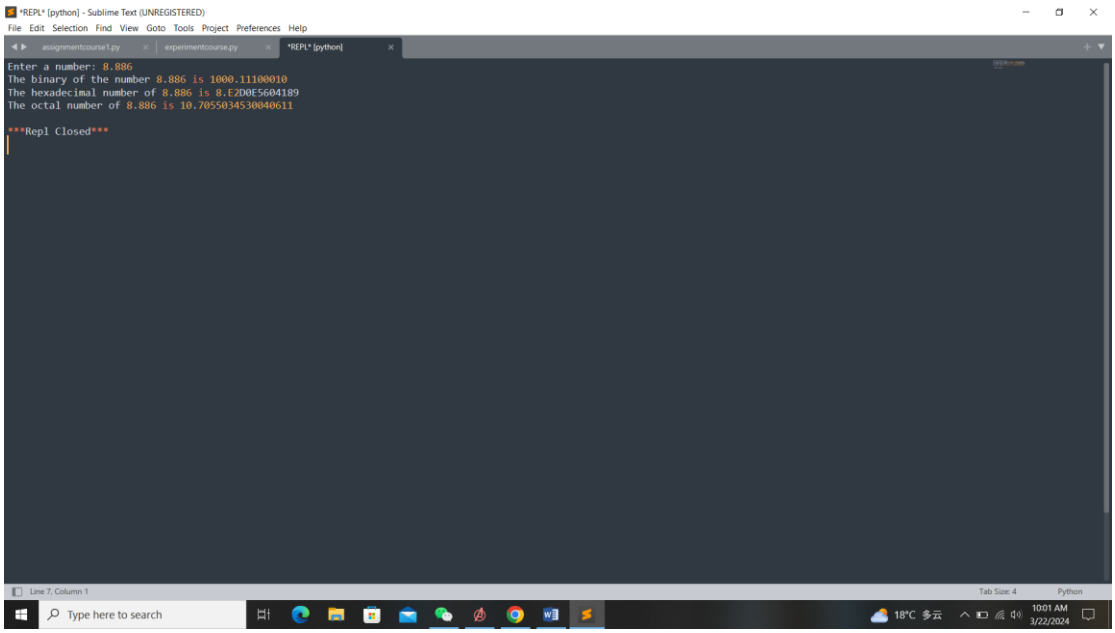
```
            if int(decimal_part) == 1:
                ans += '1'
                decimal_part -= 1
            else:
                ans += '0'

        return ans


    def decimalToOctal(decimal):
        integer_part = int(decimal)
        decimal_part = decimal - integer_part

        result = ""

        # Conversion of integer part to octal
        while integer_part > 0:
            remainder = integer_part % 8
            result = str(remainder) + result
            integer_part //= 8

        # Decimal part conversion to octal
        if decimal_part != 0:
            result += '.'

            while decimal_part != 0:
                decimal_part *= 8
                temp = int(decimal_part)
```

```
                temp = int(decimal_part)
                result += str(temp)
                decimal_part -= temp

        return result


    def main():
        number = float(input("Enter a number: "))
        print(f"The binary of the number {number} is {dec2bin(number)}")
        print("The hexadecimal number of", number, "is", decimalToHexadecimal(number))
        print("The octal number of", number, "is", decimalToOctal(number))


    if __name__ == "__main__":
        main()
```

Paste your running results here:







Send the word document to email: tangqiang@csust.edu.cn

More requirement: convert dec 3.75 into binary.

(2) Rate movies

"Shawshank Redemption" is a classic film, which has been highly praised at home and abroad. Write a program to evaluate the film. You can only enter the number 1 ~ 9 for scoring, and output the star rating (★) formed according to the user's scoring. You can output several stars as long as you score. (Note: when outputting multiple identical characters, you can use the * sign. If you want to output three A's, you can use print ('A'* 3)) the reference output results are as follows:

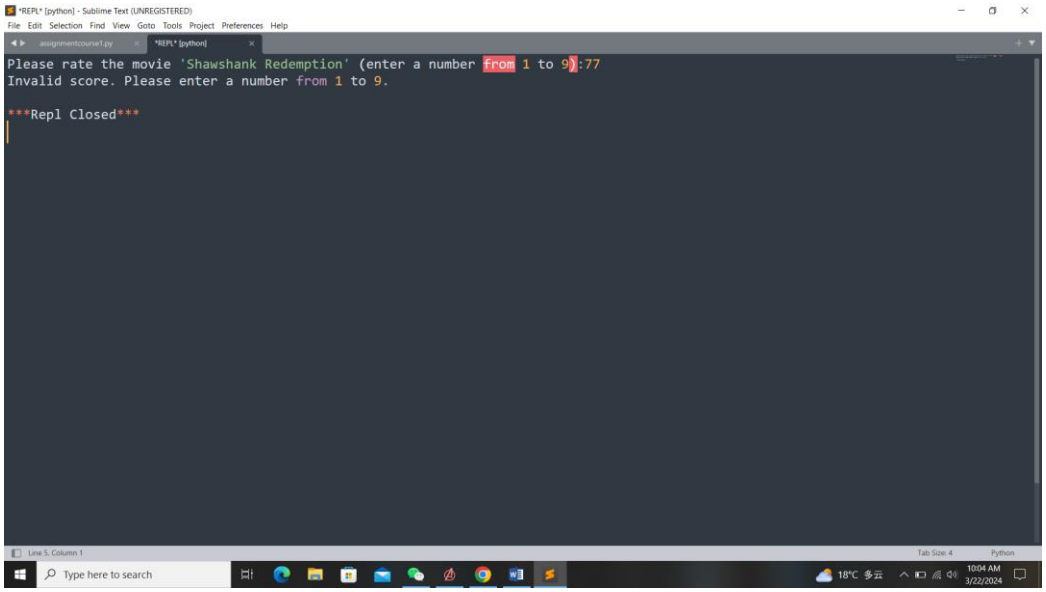
Please rate a movie called Shawshank Redemption (only numbers 1 to 9 can be entered): 5

You for Shawshank Redemption ★★★★★

Paste your code here:

```
def rate_movie():
    score = int(input("Please rate the movie 'Shawshank Redemption' (enter a number from 1 to 9):"))
    if 1 <= score <= 9:
        print("★" * score)
    else:
        print("Invalid score. Please enter a number from 1 to 9.")

rate_movie()
```

Paste your running results here:


REPL [python] - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
assignmentcourse1.py
REPL [python]
Please rate the movie 'Shawshank Redemption' (enter a number from 1 to 9):77
Invalid score. Please enter a number from 1 to 9.
Repl Closed
Line 5, Column 1
Tab Size: 4
Python
Type here to search
18°C 多云
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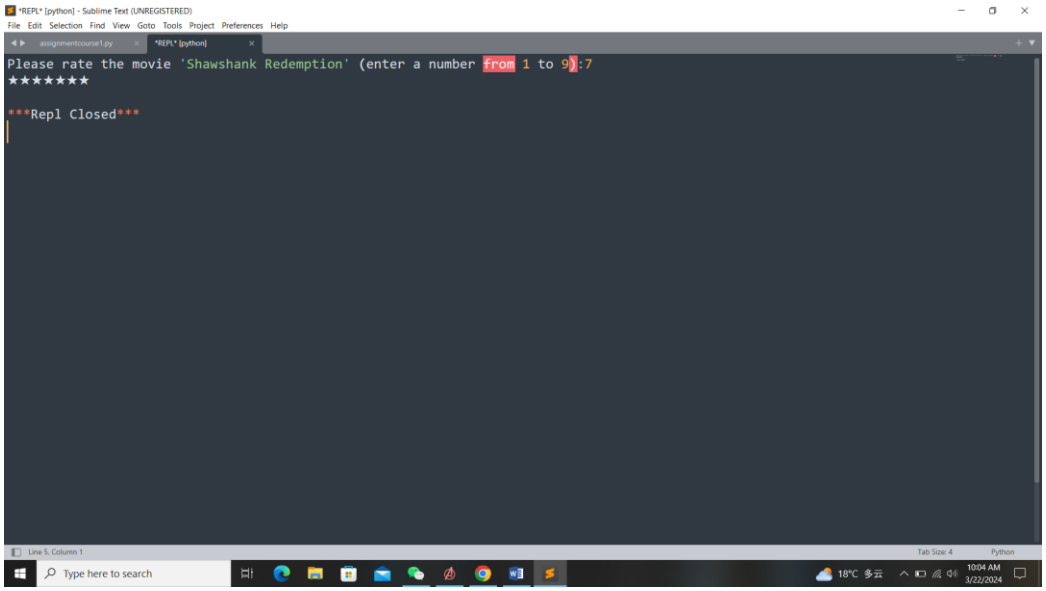
3/22/2024


REPL [python] - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
assignmentcourse1.py
REPL [python]
Please rate the movie 'Shawshank Redemption' (enter a number from 1 to 9):7
****
Repl Closed
Line 5, Column 1
Tab Size: 4
Python
Type here to search
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10:04 AM
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