Darshan UNIVERSITY
योगः कर्मसु कौशलम्

Python Programming - 2301CS404

Lab - 11

Jeet Bhalodi (23031701006)
18-02-2024

Modules

01) WAP to create Calculator module which defines functions like add, sub,mul and div.

Create another .py file that uses the functions available in Calculator module.

In [35]:
```
import calc

a = int(input("Enter a : "))
b = int(input("Enter b : "))
print(f"Addition: {calc.add(a, b)}")
print(f"Subtraction: {calc.sub(a, b)}")
print(f"Multiplication: {calc.mul(a, b)}")
print(f"Division: {calc.div(a, b)}")
```

```
Addition: 15
Subtraction: 5
Multiplication: 50
Division: 2.0
```

02) WAP to pick a random character from a given String.

In [20]:
```
import random

def pick_random_character(input_string):
```

```
    if len(input_string) == 0:
        return "Input string is empty"
    return random.choice(input_string)

input_string = input("Enter String : ")
random_character = pick_random_character(input_string)
print(f"Random character from the string '{input_string}': {random_character}")
```

```
Random character from the string 'Jeettt': t
```

03) WAP to pick a random element from a given list.

In [33]:
```
import random

def pick_random_element(input_list):
    if len(input_list) == 0:
        return "Input list is empty"
    return random.choice(input_list)

input_list = [1, 2, 3, 4, 5, 'a', 'b', 'c']
random_element = pick_random_element(input_list)
print(f"Random element from the list {input_list}: {random_element}")
```

```
Random element from the list [1, 2, 3, 4, 5, 'a', 'b', 'c']: 5
```

04) WAP to roll a dice in such a way that every time you get the same number.

In [92]:
```
import random

dice = [1,2,3,4,5,6]
random.seed(23)
print(random.choice(dice))
```

```
3
```

05) WAP to generate 3 random integers between 100 and 999 which is divisible by 5.

In [82]:
```
import random

def generate_random_integers():
    random_integers = []
    while len(random_integers) < 3:
        num = random.randint(100, 999)
        if num % 5 == 0:
            random_integers.append(num)
    return random_integers

random_integers = generate_random_integers()
print(f"Random integers between 100 and 999 that are divisible by 5: {random_intege
```

```
Random integers between 100 and 999 that are divisible by 5: [200, 940, 395]
```

06) WAP to generate 100 random lottery tickets and pick two lucky tickets from it and announce them as Winner and Runner up respectively.

In [179…
```
import random

li=[i for i in range(1,101)]
winners = random.sample(li,k=2)
print("Winner : ",winners[0])
print("Runner up : ",winners[1])
```

```
Winner :  2
Runner up :  49
```

07) WAP to print current date and time in Python.

In [102…
```
import datetime

print(datetime.datetime.now())
```

```
2025-02-18 10:38:53.230246
```

08) Subtract a week (7 days) from a given date in Python.

In [109…
```
from datetime import datetime, timedelta

def subtract_week(given_date):
    return given_date - timedelta(days=7)

given_date = datetime(2025, 2, 10)
new_date = subtract_week(given_date)
print("Given date:", given_date)
print("Date after subtracting a week:", new_date)
```

```
Given date: 2025-02-10 00:00:00
Date after subtracting a week: 2025-02-03 00:00:00
```

09) WAP to Calculate number of days between two given dates.

In [111…
```
from datetime import datetime

def calculate_days_between_dates(date1, date2):
    delta = date2 - date1
    return delta.days

date1 = datetime(2025, 2, 1)
date2 = datetime(2025, 2, 10)

number_of_days = calculate_days_between_dates(date1, date2)
print(f"Number of days between {date1.date()} and {date2.date()}: {number_of_days}
```

```
Number of days between 2025-02-01 and 2025-02-10: 9 days
```

10) WAP to Find the day of the week of a given date.(i.e. wether it is sunday/monday/tuesday/etc.)

In [119…

```python
from datetime import datetime

def find_day_of_week(date_string):
    date_object = datetime.strptime(date_string, "%Y-%m-%d")

    day_of_week = date_object.weekday()

    days = ["Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Su
    return days[day_of_week]

input_date = "2006-02-24"
day_of_week = find_day_of_week(input_date)
print(f"The day of the week for {input_date} is {day_of_week}.")
```

```
The day of the week for 2006-02-24 is Friday.
```

11) WAP to demonstrate the use of date time module.

In [186…

```python
from datetime import datetime, timedelta, date

current_datetime = datetime.now()
print("Current date and time:", current_datetime)

current_date = date.today()
print("Current date:", current_date)

specific_date = date(2025, 2, 10)
print("Specific date:", specific_date)

date1 = date(2025, 2, 1)
date2 = date(2025, 2, 24)
delta = date2 - date1
print(f"Number of days between {date1} and {date2}: {delta.days} days")

new_date = specific_date + timedelta(days=7)
print("Date after adding a week:", new_date)

new_datetime = current_datetime - timedelta(days=7)
print("Date and time after subtracting a week:", new_datetime)

formatted_date = current_datetime.strftime("%Y-%m-%d %H:%M:%S")
print("Formatted date and time:", formatted_date)

date_string = "2025-02-10 17:43:00"
parsed_datetime = datetime.strptime(date_string, "%Y-%m-%d %H:%M:%S")
print("Parsed datetime:", parsed_datetime)
```

```
Current date and time: 2025-02-18 10:59:05.243472
Current date: 2025-02-18
Specific date: 2025-02-10
Number of days between 2025-02-01 and 2025-02-24: 23 days
Date after adding a week: 2025-02-17
Date and time after subtracting a week: 2025-02-11 10:59:05.243472
Formatted date and time: 2025-02-18 10:59:05
Parsed datetime: 2025-02-10 17:43:00
```

12) WAP to demonstrate the use of the math module.

In [184…

```python
import math

number = 16
sqrt_result = math.sqrt(number)
print(f"Square root of {number} is {sqrt_result}")

number = 5
factorial_result = math.factorial(number)
print(f"Factorial of {number} is {factorial_result}")

number1 = 48
number2 = 18
gcd_result = math.gcd(number1, number2)
print(f"GCD of {number1} and {number2} is {gcd_result}")

angle = math.pi / 4
sine_result = math.sin(angle)
cosine_result = math.cos(angle)
tangent_result = math.tan(angle)
print(f"Sine of 45 degrees is {sine_result}")
print(f"Cosine of 45 degrees is {cosine_result}")
print(f"Tangent of 45 degrees is {tangent_result}")

degrees = 90
radians = math.radians(degrees)
print(f"{degrees} degrees is {radians} radians")

radians = math.pi / 2
degrees = math.degrees(radians)
print(f"{radians} radians is {degrees} degrees")

number = 2
exp_result = math.exp(number)
print(f"e^{number} is {exp_result}")

number = 10
log_result = math.log(number)
print(f"Natural logarithm of {number} is {log_result}")

base = 2
exponent = 3
pow_result = math.pow(base, exponent)
print(f"{base} raised to the power of {exponent} is {pow_result}")
```

```
Square root of 16 is 4.0
Factorial of 5 is 120
GCD of 48 and 18 is 6
Sine of 45 degrees is 0.7071067811865476
Cosine of 45 degrees is 0.7071067811865476
Tangent of 45 degrees is 0.9999999999999999
90 degrees is 1.5707963267948966 radians
1.5707963267948966 radians is 90.0 degrees
e^2 is 7.38905609893065
Natural logarithm of 10 is 2.302585092994046
2 raised to the power of 3 is 8.0
```