

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.

```
import calculator as cal

a = int(input("Enter first number: "))
b = int(input("Enter second number: "))

print("Addition:", cal.add(a, b))
print("Subtraction:", cal.sub(a, b))
print("Multiplication:", cal.mul(a, b))
print("Division:", cal.div(a, b))
```

```
Enter first number: 10
Enter second number: 2
```

```
Addition: 12
Subtraction: 8
Multiplication: 20
Division: 5.0
```

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

```
import random

string = input("Enter a string: ")
random_char = random.choice(string)

print("Random character:", random_char)
```

```
Enter a string: Parth Dadhaniya
```

```
Random character: i
```

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

```
import random

lst = input("Enter list elements separated by spaces: ").split()
random_element = random.choice(lst)
```

```
print("Random element:", random_element)
```

Enter list elements separated by spaces: apple banana mango grapes

Random element: banana

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

```
import random
```

```
fixed_number = int(input("Enter a fixed dice number (1 to 6): "))
```

```
def roll_dice():  
    random.seed(42)  
    return fixed_number
```

```
print("Rolled number:", roll_dice())
```

Enter a fixed dice number (1 to 6): 2

Rolled number: 2

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

```
import random
```

```
random_numbers = [random.randrange(100, 1000, 5) for _ in range(3)]
```

```
print("Random numbers divisible by 5:", random_numbers)
```

Random numbers divisible by 5: [915, 240, 130]

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

```
import random
```

```
lottery_tickets = random.sample(range(1000, 10000), 100)
```

```
winner, runner_up = random.sample(lottery_tickets, 2)
```

```
print("Winner Ticket:", winner)
```

```
print("Runner-up Ticket:", runner_up)
```

Winner Ticket: 8359

Runner-up Ticket: 4483

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

```
from datetime import datetime

current_time = datetime.now()

print("Current Date and Time:", current_time)

Current Date and Time: 2025-02-15 09:02:55.127242
```

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

```
from datetime import datetime, timedelta

given_date = input("Enter a date (YYYY-MM-DD): ")
date_obj = datetime.strptime(given_date, "%Y-%m-%d")

new_date = date_obj - timedelta(days=7)

print("Date after subtracting a week:", new_date.strftime("%Y-%m-%d"))

Enter a date (YYYY-MM-DD): 2025-02-15

Date after subtracting a week: 2025-02-08
```

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

```
from datetime import datetime

date1 = input("Enter first date (YYYY-MM-DD): ")
date2 = input("Enter second date (YYYY-MM-DD): ")

date_obj1 = datetime.strptime(date1, "%Y-%m-%d")
date_obj2 = datetime.strptime(date2, "%Y-%m-%d")

days_difference = abs((date_obj2 - date_obj1).days)

print("Number of days between the given dates:", days_difference)

Enter first date (YYYY-MM-DD): 2025-02-15
Enter second date (YYYY-MM-DD): 2024-02-15

Number of days between the given dates: 366
```

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

```
from datetime import datetime

date_input = input("Enter a date (YYYY-MM-DD): ")
date_obj = datetime.strptime(date_input, "%Y-%m-%d")
```

```
day_of_week = date_obj.strftime("%A")
print("Day of the week:", day_of_week)
Enter a date (YYYY-MM-DD): 2025-02-15
Day of the week: Saturday
```

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

```
from datetime import datetime, timedelta

current_datetime = datetime.now()
print("Current Date and Time:", current_datetime.strftime("%Y-%m-%d %H:%M:%S"))

current_date = current_datetime.date()
print("Current Date:", current_date)

current_time = current_datetime.time()
print("Current Time:", current_time.strftime("%H:%M:%S"))

future_date = current_datetime + timedelta(days=7)
print("Date after 7 days:", future_date.strftime("%Y-%m-%d"))

past_date = current_datetime - timedelta(days=7)
print("Date 7 days ago:", past_date.strftime("%Y-%m-%d"))

date_input = "2025-02-15"
date_obj = datetime.strptime(date_input, "%Y-%m-%d")
print(f"The day of {date_input} is:", date_obj.strftime("%A"))

Current Date and Time: 2025-02-15 09:10:33
Current Date: 2025-02-15
Current Time: 09:10:33
Date after 7 days: 2025-02-22
Date 7 days ago: 2025-02-08
The day of 2025-02-15 is: Saturday
```

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

```
import math

num = 25
print("Square root of", num, "is:", math.sqrt(num))

base, exponent = 2, 5
print(f"{base} raised to the power {exponent} is:", math.pow(base, exponent))

num = 5
```

```
print(f"Factorial of {num} is:", math.factorial(num))
```

```
angle = math.radians(30)
```

```
print("Sin(30°):", math.sin(angle))
```

```
print("Cos(30°):", math.cos(angle))
```

```
print("Tan(30°):", math.tan(angle))
```

```
num = 10
```

```
print("Natural log of", num, "is:", math.log(num))
```

```
print("Log base 10 of", num, "is:", math.log10(num))
```

```
print("Value of Pi:", math.pi)
```

```
print("Value of Euler's number (e):", math.e)
```

Square root of 25 is: 5.0

2 raised to the power 5 is: 32.0

Factorial of 5 is: 120

Sin(30°): 0.49999999999999994

Cos(30°): 0.8660254037844387

Tan(30°): 0.5773502691896257

Natural log of 10 is: 2.302585092994046

Log base 10 of 10 is: 1.0

Value of Pi: 3.141592653589793

Value of Euler's number (e): 2.718281828459045