

1. To accept an object mass in kilogram and velocity in meters per second and display its momentum. Momentum is calculated as

$E=mc^2$ where m is the mass of the object and c is the velocity .

```
In [1]: mass = float(input("Enter mass in kilogram: "))
velocity = float(input("Enter velocity in meters per second: "))
momentum = mass*velocity
print(f"the momentum of th object is:{momentum}")
```

```
Enter mass in kilogram: 5
Enter velocity in meters per second: 8
the momentum of th object is:40.0
```

2. Write a python program for following conditions, if n is single digit square of it ,if n is two digit print square root of it, if n is three digit print cube root of it.

```
In [2]: import math
n = int(input("Enter a number: "))
if 0<=n<10:
    print(f"Square of {n}:{n**2}")
elif 10<=n<100:
    print(f"Square root of {n}: {math.sqrt(n):.2f}")
elif 100<=n<1000:
    print(f"Cube root of {n}: {n**(1/3):.2f}")
else:
    print("Please enter a number between 0 and 999.")
```

```
Enter a number: 65
Square root of 65: 8.06
```

3. Read the birth date and salary in rupees of employees. Perform data transformation for birthdate to age and also salary which is in rupees to salary in dollars using functions .

```
In [20]: from datetime import datetime
def calculate_age(birthdate):
    today = datetime.now()
    birthdate = datetime.strptime(birthdate, "%Y-%m-%d")
    return today.year - birthdate.year - ((today.month, today.day) < (birthdate.month, birthdate.day))

def salary_in_dollars(salary_in_rupees, conversion_rate=82.5):
    return salary_in_rupees / conversion_rate
birthdate = input("Enter birthdate (YYYY-MM-DD): ")
salary = float(input("Enter salary in rupees: "))

age = calculate_age(birthdate)
salary_usd = salary_in_dollars(salary)

print(f"Age: {age} years")
print(f"Salary in USD: ${salary_usd:.2f}")
```

```
Enter birthdate (YYYY-MM-DD): 2006-09-21
Enter salary in rupees: 500
Age: 18 years
Salary in USD: $6.06
```

4. Print the reverse number of a number .

```
In [8]: number = int(input("Enter a number: "))
reverse_number = int(str(number)[::-1])
print(f"Reversed number: {reverse_number}")
```

```
Enter a number: 456
Reversed number: 654
```

5. Print multiplication table of number n.

```
In [9]: n = int(input("Enter a number: "))
for i in range(1,11):
    print(f"{n} x {i} = {n*i}")
```

```
Enter a number: 5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

6.To accept students five courses marks and compute her result.student is passing if she scores marks equal to and above 40 in

each course. if student scores aggregate greater than 75 percentage ,then the grade is distinction if aggregate is greater than or equal to 60 and less than 75 then first division if aggregate is greater than or equal to 50 and less than 60 then second division and id aggregate is greater than or equal to 40 and less than 50 then third division .

```
In [22]: marks = [int(input(f"Enter marks for course {i+1}: "))for i in range(5)]
if all (mark>=40 for mark in marks):
    aggregate = sum(marks)/5
    if aggregate>75:
        grade = "distinction"
    elif 60<=aggregate <75:
        grade = "First division"
    elif 50<= aggregate <60:
        grade = "Second division"
    else:
        grade = "Third division"
    print(f"students passed with {grade} (Aggregate: {aggregate:.2f}%)")
else:
    ("Failed")
```

```
Enter marks for course 1: 56
Enter marks for course 2: 78
Enter marks for course 3: 65
Enter marks for course 4: 75
Enter marks for course 5: 45
students passed with First division (Aggregate: 63.80%)
```

7. Write a fibonacci sequence using recursive functions in python.

```
In [25]: def fibonacci(n):
        if n<=1:
            return n
        return fibonacci(n-1) + fibonacci(n-2)

terms = int(input("Enter the number of terms: "))
for i in range(terms):
    print(fibonacci(i),end= " ")
```

```
Enter the number of terms: 5
01123
```

In []: