

To accept an object mass in kilograms and velocity in meters per second and display its momentum. Momentum is calculated as $e=mc^2$ where m is mass of object and c is its velocity.

```
In [5]: mass = float(input("Enter mass in kilogram: "))
velocity = float(input("enter velocity in meters per second: "))
momentum = mass * velocity
print(f"The momentum of the object is : {momentum}")
```

The momentum of the object is : 33.480000000000004

Write a Python program for following conditions. If n is single digit print square of it. If n is two digit print square root of it. If n is three digit print cube root of it.

```
In [4]: 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 to 999: ")
```

Cube root of 841: 9.44

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 function.

```
In [6]: 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=87.5):
    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}")

```

Age: 18 years
Salary in USD:\$1120.00

Print the reverse number of a given number

```

In [7]: number = int(input("Enter a number: "))
reverse_number = int(str(number)[::-1])
print(f"Reversed number: {reverse_number}")

```

Reversed number: 6347

Print multiplication table of number n

```

In [8]: n = int(input("Enter a number: "))
for i in range(1, 11):
    print(f"{n} x {i} = {n*i}")

```

9 x 1 = 9
 9 x 2 = 18
 9 x 3 = 27
 9 x 4 = 36
 9 x 5 = 45
 9 x 6 = 54
 9 x 7 = 63
 9 x 8 = 72
 9 x 9 = 81
 9 x 10 = 90

To accept students five courses marks and compute his/her result. Student is passing if he/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 the grade is first division. If aggregate is greater than or

equal 50 and less than 60, then the grade is second division. If aggregate is greater than or equal 40 and less than 50, then the grade is third division

```
In [12]: def compute_grade(marks):
    if any(mark < 40 for mark in marks):
        return "Fail"

    aggregate = sum(marks) / len(marks)

    if aggregate > 75:
        return "Distinction"
    elif 60 <= aggregate <= 75:
        return "First Division"
    elif 50 <= aggregate < 60:
        return "Second Division"
    elif 40 <= aggregate < 50:
        return "Third Division"
    else:
        return "Fail"

marks = []
for i in range(5):
    mark = int(input(f"Enter marks for subject {i+1}: "))
    marks.append(mark)

grade = compute_grade(marks)

print("\nStudent's Result:")
print(f"Marks: {marks}")
print(f"Aggregate Percentage: {sum(marks)/5:.2f}%")
print(f"Grade: {grade}")
```

Student's Result:
 Marks: [65, 87, 81, 93, 97]
 Aggregate Percentage: 84.60%
 Grade: Distinction

Write a the Fibonacci sequence using recursive function in Python

```
In [17]: 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=" ")
```

0 1 1 2 3 5 8 13

In []: