

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

```
In [3]: mass = float(input("Enter mass in kilograms: "))
velocity = float(input("Enter velocity in meters per second: "))
momentum = mass*velocity
print("The momentum of the object is: ",momentum)
```

The momentum of the object is: 6.0

2.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 [15]: import math
n=int(input("Enter a number: "))
if(0 <= n < 10):
    print("Square of n : ",(n**2))
elif(10 < n < 100):
    print("Square root of n : ",(math.sqrt(n)))
elif(100 < n < 1000):
    print("Cube root of n : ",(n**(1/3)))
else:
    print("Please enter a number between 0 and 999.")
```

Square root of n : 6.557438524302

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 [17]: 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.mo

def salary_in_dollars(salary_in_rupees, conversion_rate=87.56):
    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: \$114.21

## 4. Print the reverse number of a given number

```

In [21]: number = int(input("Enter a number: "))
reverse_number = int(str(number)[::-1])
print("Reversed number: ", (reverse_number))

```

Reversed number: 432

## 5. Print multiplication table of number n

```

In [22]: n = int(input("Enter a number: "))
for i in range(1, 11):
    print(f"(n) x (i) = ", (n*i))

```

```

(n) x (i) = 5
(n) x (i) = 10
(n) x (i) = 15
(n) x (i) = 20
(n) x (i) = 25
(n) x (i) = 30
(n) x (i) = 35
(n) x (i) = 40
(n) x (i) = 45
(n) x (i) = 50

```

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

```
In [33]: def compute_result():
    marks = []
    total_courses = 5
    passing_marks = 40

    print("Enter marks for 5 courses:")
    for i in range(total_courses):
        mark = float(input(f"Course {i+1}: "))
        marks.append(mark)

    # Check if student passed all courses
    if any(mark < passing_marks for mark in marks):
        print("Result: Fail (Student failed in one or more subjects)")
        return

    # Calculate aggregate percentage
    total_marks = sum(marks)
    aggregate = (total_marks / (total_courses * 100)) * 100

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

    print(f"Result: Pass\nAggregate: {aggregate:.2f}%\nGrade: {grade}")

    # Run the function
    compute_result()
```

Enter marks for 5 courses:  
Result: Fail (Student failed in one or more subjects)

## 7. Write a the Fibonacci sequence using recursive function in Python.

```
In [34]: 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 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 10946 17711 286  
57 46368 75025 121393 196418 317811 514229 832040 1346269 2178309 3524578
```

```
In [ ]:
```