

1. **Write a program to prompt user to enter userid and password. If Id and password is incorrect give him chance to re-enter the credentials. Let him try 3 times. After that program to terminate**

```
correct_id = "user"
correct_password = "1234"

for attempt in range (3):
    user_id = input ("Enter User ID:")
    password = input ("Enter Password:")

    if (user_id == correct_id) and (password == correct_password):
        print ("Login Successful!")
        break
    else:
        print ("Wrong ID or Password. Try again.")

print ("Too many failed attempts! Access Denied.")
```

2. **Enter number of students from user. For those many students accept marks of 5 subject marks from user and calculate percentage. Display all percentage and average percentage of students.**

```
num_students = int (input ("Enter number of students: "))
total_percentage = 0

for i in range(num_students):
    total_marks = 0
    print (f"\nEnter marks for Student {i+1}:")

    for j in range (5):
        marks = float (input (f"Enter marks for subject {j+1}: "))
        total_marks += marks

    percentage = (total_marks / 500) * 100
    total_percentage += percentage
    print (f"Percentage of Student {i+1}: {percentage:.2f} %")

average_percentage = total_percentage / num_students
print (f"\nAverage Percentage: {average_percentage:.2f} %")
```

3. Accept no. of passengers from user and per ticket cost. Then accept age of each passenger and then calculate total amount to ticket to travel for all of them.

```
num_passengers = int (input ("Enter the number of passengers: "))
ticket_cost = float (input ("Enter the ticket cost per person: "))
total_amount = 0

for i in range(num_passengers):
    age = int (input (f"Enter age of passenger {i+1}: "))

    if age < 12:
        discount = 0.30
    elif age > 59:
        discount = 0.50
    else:
        discount = 0

    final_cost = ticket_cost * (1 - discount)
    total_amount += final_cost

print (f"\nTotal ticket amount for all passengers: Rs. {total_amount:.2f}")
```

4. Write a program to check if given number is Armstrong number or not.

```
num = int (input ("Enter a number: "))
sum_of_digits = 0
temp = num

while temp > 0:
    digit = temp % 10
    sum_of_digits += digit ** 3
    temp //= 10

if sum_of_digits == num:
    print ("Armstrong number")
else:
    print ("Not an Armstrong number")
```

5. Write a program to accept an integer amount from user and tell minimum number of notes needed for representing that amount.

```
amount = int (input ("Enter the amount: "))
notes = [2000, 500, 200, 100, 50, 20, 10, 5, 2, 1]

for note in notes:
    if amount >= note:
        count = amount // note
        print(f"{note} x {count}")
        amount %= note
```

6. Write a program to print prime numbers between 1 to 100.

```
for num in range (1, 101):
    if num > 1:
        for i in range (2, int (num ** 0.5) + 1):
            if num % i == 0:
                break
        else:
            print (num, end=" ")
```

7. Write a program to print first n prime numbers.

```
n = int (input ("Enter how many prime numbers you want: "))
count = 0
num = 2

while count < n:
    for i in range (2, num):
        if num % i == 0:
            break
    else:
        print (num, end=" ")
        count += 1
    num += 1
```

8. Write a program to solve the following series :

```
import math
n = int (input ("Enter n:"))
a = int (input ("Enter a:"))
x = int (input ("Enter x:"))

#(a)  $1! + 2! + 3! + \dots + n!$ 
fact_sum = 0
for i in range (1, n+1):
    fact_sum += math.factorial(i)
print ("Factorial Series Sum:", fact_sum)

#(b)  $N + N^2 + N^3 + \dots + N^N$ 
power_sum = 0
for i in range (1, n+1):
    power_sum += n**i
print ("Power Series Sum:", power_sum)

#(c) Geometric Series ( $1 + 2 + 4 + 8 + \dots$ )
geo_sum = 0
for i in range(n):
    geo_sum += 2**i
print ("Geometric Series Sum:", geo_sum)

#(d)  $S = a + \frac{a^2}{2} + \frac{a^3}{3} + \dots + \frac{a^{10}}{10}$ 
custom_sum = 0
for i in range (1, 11):
    custom_sum += (a**i) / i
print ("Custom Series Sum:", custom_sum)

#(e)  $x - \frac{x^2}{3} + \frac{x^3}{5} - \frac{x^4}{7} + \dots$ 
alt_sum = 0
for i in range(n):
    term = (x**i) / (2*i+1)
    if i % 2 == 1:
        term = -term
    alt_sum += term
print ("Alternating Series Sum:", alt_sum)
```

