**1.Scenario:** You are developing a banking application that categorizes transactions based on the amount entered. Write logic to determine whether the amount is positive, negative, or zero.

ANS:

1.read input

2.If amt<0🡺return neg

3.if amt==0🡺return zero

4.else🡺return positive

**2.Scenario:** A digital locker requires users to enter a numerical passcode. As part of a security feature, the system checks the sum of the digits of the passcode. Write logic to compute the sum of the digits of a given number.

ANS:

1.Read input

2.initialise sum=0

3. iterate while loop until n>0

4.digit=n%10

5.sum+=digit

6.n=n//10 🡺 go to step 3

**3.Scenario:** A mobile payment app uses a simple checksum validation where reversing a transaction ID helps detect fraud. Write logic to take a number and return its reverse.

ANS:

1.Read input

2.initialise rev=0

3. iterate while loop until n>0

4.digit=n%10

5.rev=(rev\*10)+digit

6.n=n//10 🡺 go to step 3

**4.Scenario:** In a secure login system, certain features are enabled only for users with prime-numbered user IDs. Write logic to check if a given number is prime.

ANS:

1.read input

2. Iterate for loop until i==int((n\*\*0.5))+1

3.if n%i==0 🡺 break the loop and return false

4.after the loop end 🡺 return True

**5.Scenario:** A scientist is working on permutations and needs to calculate the factorial of numbers frequently.Write logic to find the factorial of a given number using recursion.

ANS:

1.get num

2.initialize fact=1

3.iterate loop until num>=1

4.fact=fact\*num and num=num-1

**6.Scenario:** A unique lottery system assigns ticket numbers where only Armstrong numbers win the jackpot.Write logic to check whether a given number is an Armstrong number.

ANS:

1.Get num

2.l=len(str(num))

3.res=0

4.Iterate loop until num>0

5.digit=num%10

6.res+=(digit\*\*l)

7.num=num//10

**7**. **Scenario:** A password manager needs to strengthen weak passwords by swapping the first and last characters of user-generated passwords. Write logic to perform this operation on a given string.

ANS:

1.Get psw

2.st=list(psw)

3.st[0], st[len(st)-1] = st[len(st)-1], st[0]

4.return str(st)

**8.Scenario:** A low-level networking application requires decimal numbers to be converted into binary format before transmission. Write logic to convert a given decimal number into its binary equivalent.

ANS:

1.Get num

2.bin=””

3.Iterate through the loop until num>0

4.rem=num%2

5.bin=str(rem)+bin

6.num=num//2

7.print(int(bin))

**9.Scenario:** A text-processing tool helps summarize articles by identifying the most significant words. Write logic to find the longest word in a sentence.

ANS:

1.Get the string

2.l=st.split(“ “)

3.res=[]

4. Iterate the l and store the length of the word in the res

5.m=max(res)

6.i=res.index(m)

7.print( l[i] )

**10.Scenario:** A plagiarism detection tool compares words from different documents and checks if they are anagrams (same characters but different order).Write logic to check whether two given strings are anagrams.

ANS:

1.Get strings

2.s=set(st1)

3.interate through the s

4. check that count(letter) in s1 is same to count(letter) in s2

5.If condition fails, break loop, return Fsalse

6. after loop return True