Assignment-3

1] write a program to check if the given number is positive or Negative

I] Start

II] input a number num.
num=0, num=12, num=-9

III] If check condition:

- if num > 0 → print "positive number"
- Else if num < 0 → print "Negative number"
- Else → print "Number is zero"

positive number : 12 > 0 → True
Negative number : -9 > 0 → False
-9 < 0 → True

Number is zero : 0 > 0 → False
0 < 0 → False

IV] Stop.

2] write a program to input any alphabet and check whether it is vowel or consonant.

I] Start

II] input a character from the user.

I] start

II] input an alphabet ch.

ch = "E", ch = "K", ch = "O"

III] convert ch to lowercase.

e, k, o

IV] check condition:

- If ch is in [a, e, i, o, u] - print "vowel".
- Else → print "consonant".

vowel-e is in [a, e, i, o, u] → True
consonant is in [a, e, i, o, u] → False
vowel-o is in [a, e, i o, u] → True

vowel - e
consonant - k
vowel - o

V] Stop.

3] write a program to ~~into~~ input angles of a triangle and check whether triangle is valid or not

I] start

II) The three angle of the ~~tai~~ triangle:
angle 1, angle 2, angle 3.

III) check if all three angles are greater than 0.

IV) Calculate the sum of the three angles:
Sum = angle 1 + angle 2 + angle 3
180 = 60 + 60 + 60
180 = 90 + 45 + 30

V) if Sum == 180 and all angles > 0

- print "Triangle is valid"

Else

- Print "Triangle is not valid"

VI) Stop.

4) write a program to input all side of a triangle and check whether triangle is valid or not

I) Start

II) The Three side of the triangle:
a = 5, b = 7, c = 10
a = 2, b = 3, c = 6

iii) Apply the triangle inequality Theorem.

- A triangle is valid if and only if:
  - $a + b > c$ — $5 + 7 > 10$ - $12 > 10$
  - $a + c > b$ - $5 + 7 > 7$ - $15 > 7$
  - $b + c > a$ - $7 + 10 > 5$ - $17 > 5$

True — Triangle is valid

- $a + b > c$ — $2 + 3 > 6$ — $5 > 6$

So, Triangle is NOT valid

iv) If all the above conditions are true

- Print "Triangle is valid"
  Else
- print "Triangle is not valid"

v) stop.

5) write a program to check whether the triangle is equilateral, isosceles or scalene triangle.

I) Start

II] The three sides of the triangle:

a = 5 , b = 5 , c = 5

a = 6 , b = 6 , c = 8

a = 7 , b = 8 , c = 9

III] check validity using triangle inequality Theorem:

- If a+b > c and a+c > b and b+c > a, then it is a valid triangle.
- Else, print "Not a valid triangle"

~~5+5+~~

valid - 5+5 > 5, 5+5 > 5, 5+5 > 5

- All side equal - Equilateral triangle

valid - 6+6 > 8, 6+8 > 6, 6+8 > 6

- Two sides equal (a == b) - Isosceles Triangle

valid - 7+8 > 9, 7+9 > 8, 8+9 > 7

- No sides equal — scalene Triangle

IV] if valid:

- If a == b == c → print "Equilateral Triangle"
- Else if a == b or b == c or a == c → print "Isosceles tringle"
- Else if a = b or b == c or a == c print "S"
- Else → "scalene Triangle"

V] stop.

6] write a program to calculate profit or loss.

I] start

II] cost price (CP) = 500 , 800 , 300

III] selling price (SP) = 650 , 700 , 300

IV] if SP > CP , then

profit = SP - CP
= 650 - 500
profit = 150

V] Else if CP > SP , then

Loss = CP - SP
= 800 - 700
Loss = 100

VI] Else

No profit , No Loss

CP = 300 , SP = 300
CP = SP

VII] Display profit or Loss :

- profit = 150
- Loss = 100
- CP = SP - No profit No Loss.

VIII] Stop.

7] write a program to check if user has entered correct user id and password.

I] Start

II] store correct user ID and password

User ID = admin, password = 12345

III User ID from the user. = admin
password = 12345

IV] If (Entered user ID == correct user ID) and (Entered password == correct password)

- Display "Login Successful"

V] Else

- correct user id = admin
- correct password = 12345
- user enters:
- User ID = user
- password = 12345

User ID not matching ∴ invalid user ID or password.

VI] stop

8] write a program to prompt user to enter userid and password. After varifying userid and password display a 4 digit random number and ask user to enter the same. if user enters the same number then show him success massge otherwise failed (something the captcha)

I] Start

II] prompt the user to enter user ID and password.

III] check if user to enter user ID and password.

III] check if user id and password are correct.

- If correct → display "invalid user ID or password" stop.
- Else → continue.

IV] Generate a 4-digit random number (CAPTCHA).

V] display the random number to the user

VI] Ask the user to enter the number again.

VII] if the entered number = generated random number
→ display "login successful"
Else.

→ Display "Login Failed (CAPTCHA mismatch)"

VIII) Stop.

9] Input 5 subject marks marks from user and display grade (eg: First, second class....)

I] start

II] input marks of 5 subject from the user

III] calculate the total marks = sum of all 5 subject marks

IV] calculate the percentage = (total marks / (5×100)) × 100
(each sub is out of 100).

V] Apply conditions for grade:

- If percentage ≥ 60 → first class
- If 50 ≤ percentage < 60 → second class
- If 40 ≤ percentage < 50 → third class
- If percentage < 40 → fail.

VI] Display the total, percentage, and grade

sub 1 = 65 , sub 4 = 80
sub 2 = 70 , sub 5 = 75
sub 3 = 58 ,

Total = 65 + 70 + 58 + 80 + 75
= 348

= 5 × 100 = 500

percentage = $\frac{348}{500}$ × 100

= 69.6%

- percentage = 69.6% ≥ 60%, the grade is first class.

VIII] stop.

10] write a program to check if person is eligible to marry or not (male age >= 21 and female age >= 18)

I] Start

II] gender (male / female).

III] age of the person

IV] check condition:
- If gender = "male" and age >= 21 → eligible
- if gender = "female" and age >= 18 → eligible
- otherwise → not eligible.

V] display eligibity result:

- gender = male, age = 25
  condition: male age ≥ 21 → Eligible
- gender = female, age = 16
  condition: female age ≥ 18 → Not Eligible

VI] stop.

17] Accept age of five people and also per person ticket amount and then calculate total amount to ticket to travel for all of them based on following condition:

a. children below 12 = 30% discount
b. senior citizen (above 59) = 50% discount
c. others need to pay full.

I] start

II] ticket price per person.

III] Repeat for 5 people:
- age
- if age < 12 → discount price = ticket - (30% of ticket)
- Else if age > 59 → discount price = ticket - (50% of ticket).
- Else → full ticket price.
- Add discount price to total amount.

IV) After discounted price to total amount.
Let ticket price = 100
Ages of 5 people: 8, 35, 65, 10, 70

- person1: age 8 → child → 30% discount
  = 100 - (30% of 100) = 70
- person 2: age 35 → normal → full = 100
- person3: age 65 → senior → 50% discount
  = 100 - 50 = 50
- person 4: age 10 → child → 70
- person 5: age 70 → senior → 50

Total = 70 + 100 + 50 + 70 + 50 = 340

V) Stop.

(2) write a program to check if given 3 digit number is a palindrome or not.

I) start

II) a 3 digit number

III) Extract digits:
- last digit = num % 10
- middle digit = (num // 10) % 10

- first digit = num // 100

(IV) Reverse the number = (last_digit * 100) + (middle_digit * 10) + first_digit

- = (1 * 100) + (2 * 10) + 1

  = 121

Reverse number = 121

- since 121 = 121 → palindrome

- first digit = 1
- middle digit = 2
- last digit = 3

= (3 * 100) + (2 * 10) + 1

Reverse = 321
number

- since 321 ≠ 123 → Not palindrome.

(V) If reverse = original → palidrome
Else → Not palidrome

(VI) Display result.

121 = 121 → palindrome
321 ≠ 123 → Not palindrome

(VII) Stop.

13] write a program to input electricity unit charges and calculate total electricity bill according to the given condition:

For first 50 units Rs. 0.50/unit
For next 100 units Rs. 0.75/unit
For next 100 units Rs. 1.20/unit
for unit above 250 Rs 1.50/unit
An additional surcharge of 20% is added to the bill.

I] Start

II] units consumed

III] Initialize bill = 0

IV] conditions:

- If units ≤ 50 → bill = units × 0.50
- Else if units ≤ 150
  - bill = (50 × 0.50) + (units - 50) × 0.75

- Else if units ≤ 250
  - bill = (50 × 0.50) + (100 × 0.75) + (units - 150) × 1.20

- Else (units > 250)
  - bill = (50 × 0.50) + (100 × 0.75) + (100 × 1.20) + units - 250) × 1.50

bill = 25 + 75 + 120 + 75

bill = 295

v) calculate surcharge = bill * 0.20
20% of 295 = 59

vi) Final Bill = bill + surcharge
295 + 59
final Bill = 354

vii) Stop.