# GROUP ASSIGNMENT 2

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Question 1

Write a Python program to calculate the roots of a quadratic equation using the quadratic formula. The program prompts the user to enter the coefficients A, B and C and calculates the two roots. If the roots are equal only one root is displayed.
Hint:

Root1 = $\left(-B + \sqrt{B^2 - 4 \times A \times C}\right) \div 2.0 \times A$

Root2 = $\left(-B - \sqrt{B^2 - 4 \times A \times C}\right) \div 2.0 \times A$

```
import cmath
A=float(input("Enter your A coeffecient: "))
B=float(input("Enter your B coeffecient: "))
C=float(input("Enter your C coeffecient: "))
D=(B**2)-(4*A*C)
root1=(-B+ cmath.sqrt(D))/(2*A)
root2=(-B- cmath.sqrt(D))/(2*A)
if root1==root2:
    print("The root is: ",root1)
else:
    print("Root 1 is:", root1)
    print("Root 2 is:", root2)
```

Question 2

Using nested loops, write a Python program that produces the following patterns.

i).

```
& & & & & &
* & * * *  *
* * & * *  *
* * * & *  *
* *  * * & *
& & & & & &
```

```python
# Function to print the pattern
def pattern1(n):
    for i in range(n):
        for j in range(n):
            if i == j or i + j == n - 1:
                print('&', end=' ')
            else:
                print('*', end=' ')
        print()

# Input size of the pattern
n = int(input("Enter the size of the pattern (an odd number): "))
pattern1(n)
```

ii).

```
* * * * *
 * * * *
  * * *
   * *
    *
```

```
x = 5
while x >= 1:
    y = 1
    while y <= x:
        print ("*", end = '')
        y += 1
    print()
    x -= 1
```

iii). 1
2 3
4 5 6
7 8 9 10

```
x = 1
counter = 1
while x <= 4:
  y = 1
  while y <= x:
    print (counter, end = '')
    counter += 1
    y += 1
  print()
  x += 1
```

Question 3

Write a Python program to be used to evaluate the credit worthy of a client. The program reads the credit limit and the price and quantity of the item to be purchased by the client. If the value of the goods is more than the credit limit, the program displays “Sorry you cannot purchase goods worthy of such a value on credit” and allows the customer to re-enter the quantity, otherwise, displays “Thank You for purchasing from us” and the value of the purchase. This should be repeated for n customers.

```python
number_of_customers = int(input("Enter the number of customers: "))

for customer_number in range(number_of_customers):
    credit_limit = float(input("Enter the credit limit: "))
    price = float(input("Enter the price of the item: "))

    while True:
        quantity = int(input("Enter the quantity of the item: "))
        total_value = price * quantity

        if total_value > credit_limit:
            print("Sorry you cannot purchase goods worth such a value on credit")
        else:
            print(f"Thank You for purchasing from us. The total value of the purchase is ${total_value:.2f}")
            break
```