Q.1 Write a program to find all pairs of an integer array whose sum is equal to a given number?

array = [1, 2, 3, 4, 5]

target\_sum = 7

pairs = find\_pairs(array, target\_sum)

print (pairs)

***Output:*** [ [2, 5],[3, 4] ]

Q.2 Write a program to reverse an array in place? In place means you cannot create a new array. You have to update the original array.

array = [1, 2, 3, 4, 5]

reverse\_array=[5, 4, 3, 2, 1]

Q.3 Write a program to check if two strings are a rotation of each other?

rotations("hello", "lohel") = True

rotations("world", "ldwor") = True

rotations("hello", "lloeh") = False

Q.4 Write a program to print the first non-repeated character from a string?

first\_non\_repeated\_char("hello")

'h'

first\_non\_repeated\_char("aabbc")

'c'

first\_non\_repeated\_char("aabbcc")

None

Q.5 Read about the Tower of Hanoi algorithm. Write a program to implement it.

>>> tower\_of\_hanoi (3, 'A', 'C', 'B')

Move disk 1 from rod A to rod C

Move disk 2 from rod A to rod B

Move disk 1 from rod C to rod B

Move disk 3 from rod A to rod C

Move disk 1 from rod B to rod A

Move disk 2 from rod B to rod C

Move disk 1 from rod A to rod C

Q.6 Read about infix, prefix, and postfix expressions. Write a program to convert postfix to prefix expression.

>>> postfix\_to\_prefix('2 3 + 4 \*')='\* + 2 3 4'

Q.7 Write a program to convert prefix expression to infix expression.

>>> prefix\_to\_infix('\* + 2 3 4')='(2 + 3) \* 4'

Q.8 Write a program to check if all the brackets are closed in a given code snippet.

>>> check\_brackets('(a + b) \* [c - {d / e}]') = True

>>> check\_brackets('print("Hello, world!"') = False

Q.9 Write a program to reverse a stack.

>>> stack = [1, 2, 3, 4, 5]

>>> reverse\_stack = [5, 4, 3, 2, 1]

Q.10 Write a program to find the smallest number using a stack.

>>> stack = MinStack()

>>> stack.push(5)

>>> stack.push(2)

>>> stack.push(7)

>>> stack.push(1)

>>> print(stack.get\_min())

1

>>> stack.pop()

1

>>> stack.pop()

7

>>> print(stack.get\_min())

2