

Practise Questions:

1. Given a schedule containing the arrival and departure time of trains in a station, find the minimum number of platforms needed to avoid delay in any train's arrival.

```
Trains arrival  = { 2.00, 2.10, 3.00, 3.20, 3.50, 5.00  
}
```

```
Trains departure = { 2.30, 3.40, 3.20, 4.30, 4.00, 5.20  
}
```

The minimum platforms needed is 2

The train arrived at 2.00 on platform 1

The train arrived at 2.10 on platform 2

The train departed at 2.30 from platform 1

The train arrived at 3.00 on platform 1

The train departed at 3.20 from platform 1

The train arrived at 3.20 on platform 1

The train departed at 3.40 from platform 2

The train arrived at 3.50 on platform 2

The train departed at 4.00 from platform 2

The train departed at 4.30 from platform 1

The train arrived at 5.00 on platform 1

The train departed at 5.20 from platform 1

2. Given a list containing future prediction of share prices, find the maximum profit earned by buying and selling shares any number of times with the constraint, a new transaction can only start after the previous transaction is complete, i.e., we can only hold at most one share at a time.

Stock Prices: {1, 5, 2, 3, 7, 6, 4, 5}

Total profit earned is 10

Buy on day 1 and sell on day 2

Buy on day 3 and sell on day 5

Buy on day 7 and sell on day 8

Stock Prices: {10, 8, 6, 5, 4, 2}

Total profit earned is 0

3. 4-sum problem: Given an unsorted integer array, check if it contains four elements tuple (quadruplets) having a given sum.

Input:

```
nums = [ 2, 7, 4, 0, 9, 5, 1, 3 ]  
target = 20
```

Output: Quadruplet exists.

Below are quadruplets with the given sum 20

(0, 4, 7, 9)

(1, 3, 7, 9)

(2, 4, 5, 9)