**Hexaware Foundation Training**

**Day 1(10.03.2025)--Exercises:**

**1. A bear starting from the point P, walked one mile due south,  
Then he changed direction and walked one mile due east. Then he  
turned again to the left and walked one mile due north and arrived at point P he started from what was the color of the bear?**

Algorithm:

Step 1: Start  
Step 2: Consider a bear starting from point P  
Step 3: Walk one mile south  
Step 4: Turn left and walk one mile east  
Step 5: Turn left again and walk one mile north  
Step 6: Observe that the bear has returned to the starting point P  
Step 7: This scenario is possible only near the North Pole  
Step 8: The only type of bear found near the North Pole is a polar bear  
Step 9: The color of the bear is white  
Step 10: End.

**2. Two towns A and B are 3 km s apart It is proposed to build   
a new school serving 100 students in town A and 50 students  
in town B. How far from town A should the school be built   
if the total travel distance by all 150 students is to be as small as  
possible?**

Algorithm:

* Step 1: Start
* Step 2: Read the number of students in Town A and Town B.
* Step 3: Read the distance between the two towns.
* Step 4: Calculate the school location using the formula:  
  Distance from A = (Students in B × Distance) ÷ (Total students)
* Step 5: Print the location of the school.
* Step 6: End

**Calculation:**

Given:  
Students in A = 100  
Students in B = 50  
Distance between A and B = 3 km

Distance from A = (50 × 3) ÷ (100 + 50) = 1 km from A (or 2 km from B).

**3. A traveller arrives at hotel he has no money but only a silver chain consisting of  6 links. He uses one link to pay for each day   
spent at the hotel but the hotel manager agrees to accept no more than one broken link  
How should the traveller cut up the chain in order to settle the  
amount with the hotel manager on a daily basis  
    1) what is the least number of links that have to be cut if the traveller stays 100 days at the hotel  and has a chain consisting of 100 links? what is the answer in general case n days and n links?**

 Algorithm:

Step 1: Start  
Step 2: Read the total number of links in the silver chain  
Step 3: The traveler needs to pay one link per day  
Step 4: The hotel manager allows at most one broken link  
Step 5: To minimize cuts, break links in a way that allows different combinations for daily payments  
Step 6: For a 6-link chain, cut at positions to allow payments of 1, 2, and 3 links  
Step 7: In the general case for n days, cut links at powers of 2 (1, 2, 4, 8, ...)  
Step 8: Print the minimum number of cuts required  
Step 9: Stop

**4. Rearrange the letters in the words new door to make one word**

Algorithm:

Step 1: Start  
Step 2: Read the given phrase "new door"  
Step 3: Rearrange the letters to form a meaningful word  
Step 4: The correct word formed is "one word"  
Step 5: Print the new word  
Step 6: Stop

**5.  do divide and conquer  6   5  1  4  3  2**

Algorithm:

Step 1: Start  
Step 2: Divide the given list into two equal halves.  
Step 3: Conquer by solving each half separately using recursion.  
Step 4: Combine the results from both halves to get the final output.  
Step 5: End

Example: Sorting [6, 5, 1, 4, 3, 2] using Merge Sort

1. Divide: Split into [6, 5, 1] and [4, 3, 2]
2. Conquer: Recursively split into [6], [5, 1], [4], [3, 2]
3. Sort and Merge: [5, 1] → [1, 5], [3, 2] → [2, 3]
4. Final Merge: [1, 5, 6] and [2, 3, 4] → [1, 2, 3, 4, 5, 6]

**6,  Draw flowchart for calculating simple interest**

Print SI

Input P, n, r

Calculate SI = (P x n × r) / 100