S.No: 11	Exp. Name: ***Optimal Merge Pattern***	Date:2025-10-09

Aim:

Write a C program to perform optimal merging on a given input array of elements, and print the output as shown in the examples.

Source Code:

OptimalMerge.c

```
#include <stdio.h>
#include <stdlib.h>

// Function to Sort the files in ascending order, perform optimal file merging and re
turn the minimum cost
int optimalMerge(int files[], int n) {
   int totalcost=0,temp;
   while(n>1){
      for(int i=0;i<n-1;i++){
         for(int j=0;j<n-i-1;j++){
            if(files[j]>files[j+1]){
               temp=files[j];
               files[j]=files[j+1];
               files[j+1]=temp;
            }
         }
      }
      int merged=files[0]+files[1];
      totalcost+=merged;
      files[0]=merged;
      for(int i=1;i<n-1;i++){
         files[i]=files[i+1];
      }
      n--;
   }
   return totalcost;
}

int main() {
    int n;
    printf("Number of files: ");
    scanf("%d", &n);
    int *files = (int *)malloc(n * sizeof(int));
    printf("Enter the sizes of %d files: ", n);
    for (int i = 0; i < n; i++) {
        scanf("%d", &files[i]);
    }
    int minCost = optimalMerge(files, n);
    printf("Minimum cost of merging is: %d\n", minCost);
    free(files);
    return 0;
}
```


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Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Number of files: 5
Enter the sizes of 5 files: 20 10 5 30 30
Minimum cost of merging is: 205

Test Case - 2
User Output
Number of files: 6
Enter the sizes of 6 files: 8 11 16 18 9 20
Minimum cost of merging is: 208

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