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 i, j, temp, mincost = 0;

   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;
               }
            }
      }

   while(n > 1){
      int merged = files[0] +files[1];
      mincost += merged;
      files[0]= merged;
      for(int i = 1; i < n-1; i++)
         {
            files[i] = files[i+1];
         }
      n--;
      for(int i = 0 ; i< n -1; i++)
         {
            for(int j = 0 ; j < n -i-1;  j++)
               {
                  if(files[j] > files[j+1])
                  {
                     int temp = files[j];
                     files[j]  =files[j+1];
                     files[j+1]= temp;
                  }
               }
         }
   }
   return mincost;
}
```


ID: 24070521030
2024-28-CSE-A
Symbiosis Institute of Technology | SIT Nagpur

```
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;
}
```


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