Aaditiya Tyagi

2200290120001

Program-1

```java
//Aaditiya Tyagi
//2200290120001
import java.util.*;
public class Main {
    static boolean flag = false;
    static void printSubsetSum(int i, int n, int[] set,int targetSum,List<Integer> subset)
    {if (targetSum == 0) {flag = true;
        System.out.print("[ ");
        for (int j = 0; j < subset.size(); j++) {
            System.out.print(subset.get(j) + " ");}
        System.out.print("]");return;}
    if (i == n) {return;}
        printSubsetSum(i + 1, n, set, targetSum, subset);
        if (set[i] <= targetSum) {
            subset.add(set[i]);
            printSubsetSum(i + 1, n, set,targetSum - set[i], subset);
            subset.remove(subset.size() - 1);   }}
    public static void main(String[] args)
    {   Scanner sc = new Scanner(System.in);
        System.out.println("Aaditiya Tyagi");
         System.out.println("2200290120001");
        System.out.print("Enter the size of the set :");
        int n = sc.nextInt();
        int [] arr = new int[n];
        System.out.println("Enter elements of the set :");
        for(int i=0 ; i<n ; i++){arr[i]=sc.nextInt();}
        System.out.println("Enter the sum:");
         int sum = sc.nextInt();
        List<Integer> subset = new ArrayList<>();
        System.out.println("Output 1:");
        printSubsetSum(0, n, arr, sum, subset);
        System.out.println();
}}
```

Output:
```
Aaditiya Tyagi
2200290120001
Enter the size of the set :4
Enter elements of the set :
2
5
4
3
Enter the sum:
7
Output 1:
[ 4 3 ][ 2 5 ]

=== Code Execution Successful ===
```

Program-2

```java
//Aaditiya Tyagi
//2200290120001
import java.util.*;
class ShellSort
{
    public  void print(int arr[])
    {
        int n = arr.length;
        for (int i=0; i<n; ++i)
            System.out.print(arr[i] + " ");
        System.out.println();
    }
    int sort(int arr[])
    {
        int n = arr.length;
        for (int gap = n/2; gap > 0; gap /= 2)
        { for (int i = gap; i < n; i += 1)
            {
                int temp = arr[i];
                int j;
                for (j = i; j >= gap && arr[j - gap] > temp; j -= gap)
                    arr[j] = arr[j - gap];
                arr[j] = temp;
            }
        }
        return 0;
    }
}
public class Main{
    public static void main(String args[])
    {   Scanner sc = new Scanner(System.in);
    System.out.println("Aaditiya Tyagi");
    System.out.println("2200290120001");
    System.out.print("Enter the size of the array :");
        int n =sc.nextInt();

        int [] arr = new int[n];
    System.out.println("Enter the elemenets of the array");
    for(int i=0 ; i<n ; i++){
        arr[i]=sc.nextInt();
    }
        ShellSort ob = new ShellSort();
        ob.sort(arr);
        System.out.println("Array after sorting");
        ob.print(arr);
    }
}
```

Output:
```
Aaditiya Tyagi
2200290120001
Enter the size of the array :5
Enter the elemenets of the array
10
9
7
6
5
Array after sorting
5 6 7 9 10

=== Code Execution Successful ===
```