

8) Design and implement C/C++ Program to find a subset of a given set $S = \{s_1, s_2, \dots, s_n\}$ of n positive integers whose sum is equal to a given positive integer d .

Soln:

```
#include<stdio.h>

#include<conio.h>

void subset(int,int,int);

int count=0,d,s[10],x[10];

void main()

{

    int sum=0,i,n;

    printf("\n enter number of elements:\t");

    scanf("%d",&n);

    printf("\n enter elements in ascending order:\n");

    for(i=0;i<=n-1;i++)

    {

        scanf("%d",&s[i]);

    }

    printf("\n enter the required sum:\t");

    scanf("%d",&d);

    for(i=0;i<=n;i++)

    {

        sum=sum+s[i];

    }

    if(sum<d || s[0]>d)

    {
```

```

    printf("no solutions exists:\n");

}

else

{

    subset(0,0,sum);

}

}

void subset(int m,int k,int sum)

{

    int i;

    x[k]=1;

    if(m+s[k]==d)

    {

        printf("\n subset solution %d is in-->\t",++count);

        for(i=0;i<=k;i++)

        {

            if(x[i]==1)

            {

                printf("%d\t",s[i]);

            }

        }

    }

    else if(m+s[k]+s[k+1]<=d)

    {

        subset(m+s[k],k+1,sum-s[k]);

    }

    if((m+sum-s[k]>=d) && (m+s[k+1]<=d))

```

```

{
    x[k]=0;

    subset(m,k+1,sum-s[k]);
}

if(count==0)

{
    printf("no solution exists\n");
}
}

```

OUTPUT:

```

enter number of elements:      5

enter elements in ascending order:
2
3
4
5
6

enter the required sum:      9

subset solution 1 is in-->    2      3      4
subset solution 2 is in-->    3      6
subset solution 3 is in-->    4      5
PS C:\ada lab programs c file>

```

