ADA Lab test - 2

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

int max (int a, int b)
  {
    if (a>b)
      return a;
    else return b;
  }
  void knapsack (int w[], int v[], int S, int n)

  { int K[n+1][S+1];
      int i, j, res=0;
      for (i=0; i<=n; i++)
         for (j=0; j<=S; j++)

         { if (i=00 ||j==0)
              K[i][j]=0;
         else if (w[i-1]=<=j)
              K[i][j] = max(v[i-1]+K[i-1]-w[i-1]],
                            K[i-1][j]);
         else K[i][j]=K[i-1][j];
         }
```

```
res = k[n][S];
printf(" \n\n Maximum value that can be obtained is:
                                        %d", res);

  j = S;
  printf ("\n And the objects with there respective weights
     Selected are :");
    for (i=n; i>0 && res>0; i--)
    {
      if (res == k[i-1][j])
          continue;
       else
       { print("%d", w[i-1]);
            res = res - v[i-1];
             j = j - w[i-1];
       }
     }
  }

int main()
{
  int w[10], v[10], S, n, i;
   printf("\n Enter the number of objects: ");
     scanf("%d", &n);
   printf("\n Enter the weights of the objects: ");
     for (i=0; i<n; i++)
          scanf("%d",& w[i]);
```

```
printf ("\n Enter the values of the objects : ");
   for (i=0; i<n; i++)
     scanf ("%d", &v[i]);
  printf ("\n Enter the size of the knapsack : ");
    scanf ("%d", &s);
    knapscak (w, v, s, n);
  }
```

```
printf (" \n Enter the values of the objects : ");
  for (i=0; i<n; i++)
    scanf ("%d", &v[i]);
 printf ("\n Enter the size of the knapsack : ");
  scanf ("%d", &s);
  knapscak (p, v, s, n);
 }
```

Modified program

```
# include <stdio.h>
# include <conio.h>
 int max (int a, int b)
 {
   if (a>b)
     return a;
   else return b;
 }
 void knapscak (int p[], int v [], int s, int n)
 { int t [n+1][s+1];
   int i, j res =0, count =0;
   for (i=0; i<=n; i++)
     for j=0 j<s; j++)
      { if (i==0|| j==0)
k[i][j] =0;
else if (w[i-1]<=j)
 k[i][j] = max (v[i-1] + k[ i-1][j-w] ], k[i-1][j]);
 else
   k[i][j]=k[i-1][j];
 }
res =k[n][s];
printf("\n\n Maximum value that can be obtained is : %d", res);

 j=s;
 printf("\n And the object with their respective ~~%d", res);~~
        weights selected are:");
      for (i= n; i>0 && res>0; i--)

    {  if (res == k[i-1][j])
      continue;
      else
      { printf("%d", w[i-1]);
      res = res - v[i-1];
      j = j-w[i-1];
      }
      count++;
    }
```

```
printf("\n\n the count of the items selected: %d:",
                                            count);
                                            }

int main()
{ int w[10], v[10], s, n, i;
  printf("\n Enter the number of objects:");
  scanf("%d", &n);
   print("\n Enter the weights of the objects: ");
   for (i=0; i<n; i++)
      scanf("%d", &w[i]);
   printf(" ~~\n\n~~ Enter the values of the objects:");
    for (i=0; i<n; i++)
       scanf("%d", &v[i]);
     printf("\n Enter the size of the knapsack:");
     scanf("%d", &s);
      knapsack(w,v,s,n);
   }
```