Fractional Knapsack Problem

```
#include <stdio.h>

void swap(double a, double b,
                double temp)
{
   temp = a;
   a = b;
   b = temp;
}

void fractionalKnapsack( int n,
   double weights[], double values[],
            double capacity)
{
   double  valuePerWeight[n];
   for (int i=0; i<n; i++)
   {
      valuePerWeight[i] = values[i]/
                          weights[i];

   }
   for(int i=0; i<n-1; i++)
   {
      ~~if (val~~
      for (int  j=0; j<n-i-1; j++)
      {
        if (valuePerWeight[j] <
               valuePerWeight[j+1])
        {
          double temp = weights[j];
      weights[j] = weights[j+1];
      weights[j+1] = temp;

      temp = values[j];
      values[j] = values[j+1];
      values[j+1] = temp;

      temp = valuePerWeight[j];
      valuePerWeight[j] = valuePerWeight
                                   [j+1];
      valuePerWeight[j+1] = temp;
    }
  }
}
double totalValue = 0.0;
double currentWeight = 0.0;

for (int i=0; i<n; i++)
{
  if (currentWeight + weights[i] <=
                      capacity)
  {
    currentWeight += weights[i];
    totalValue += values[i];
  }
  else
  {
    double remainingCapacity =
          capacity - currentWeight;
    totalValue += values[i] *
        (remainingCapacity / weights[i]
        break;
      }
    }
   printf("Maximum value in
               Knapsack = %.2f\n",
                       totalValue);

}
int main()
{
   int n;
   printf("Enter number of items:")
   scanf("%d", &n);

   double weights[n], values[n],
                   capacity;

   printf("Enter weights and
         values of each item: \n");
  for (int i=0; i<n; i++)
     scanf("%lf %lf", &weights[i],
                      &values[i]);
  printf("Enter capacity of knapsack");

  scanf("%lf", &capacity);

  fractionalKnapsack(n, weights,
                   values, capacity);

  return 0;
}
```

O/P:

```
Enter no. of items :7
Enter weeight and values of each
item:

1 5
3 10
5 15
4 7
1 8
3 9
2 4

Enter the profit: 5 10 15 7 8 9 4

Maximum value in knapsack=47.25
Minimum value in knapsack =46
Profit/weeight value in
                knapsack = 51
```

5/7/24

12-7-24

N-Queens Problem

```
#include <stdio.h>
int place (int x[10], int k)
{
    int i;
    for(i=1; i<k; i++)
    {
     if(x[i]==x[k]|| i-x[i]==k-x[k]
                   ||i+x[i]== k+x[k])
        return 0;
    }
    return 1;
}
void nqueens(int n)
{
   int x[10], count=0, k=1, s=0;
   x[k]=0;
   while (k!=0)
   {
     ~~x[k]=x[k]+1;~~
     ~~while (x[k]<=n && !place(x,k))~~
        ~~x[k]=x[k]+1;~~
     if(x[k]<=n)
     {
       if(k==n)
       {
         s=s+1;
       }
       else
       {
         k++;
        x[k] = 0;
      }
    }
    else
    {
      k--;
    }
  }
  printf("No. of solutions: %d", s);
}
void main()
{
  int n;
  printf("Enter number of queens
                to be placed:");
  scanf("%d", &n);
  nqueens(n);
}
```

O/P:-

```
Enter number of queens to be placed:4
No. of solutions:2
```