answers07

1.

```c
#include <stdio.h>
#define MAX 100
int main()
{
    int data[MAX];
    int N, count=0;
    scanf("%d", &N);
    for (int i=0; i<N; i++) scanf("%d", &data[i]);

    for (int i=0; i<N; i++) {
        for (int j=i+1; j<N; j++) {
            if (data[i] > data[j] ) {
                printf("%d %d\n", data[i], data[j]);
                count++;
            }
        }
    }
    printf("%d\n", count);
}
```

2.

```c
#include <stdio.h>
#define MAX 100
int main()
{
    int data[MAX];
    int N, K, count=0;
    scanf("%d", &N);
    for (int i=0; i<N; i++) scanf("%d", &data[i]);
    scanf("%d", &K);

    for (int i=0; i<N; i++) {
        for (int j=i+1; j<N; j++) {
            for (int k=j+1; k<N; k++) {
                if (data[i] + data[j] + data[k] == K) {
                    printf("%d %d %d\n", data[i], data[j], data[k]);
                    count++;
                }
            }
        }
    }
    printf("%d\n", count);
}
```

4.

```c
#include <stdio.h>
#define MAX 100
int main()
{
    int data[MAX];
    int N, maxLen = 1;
    scanf("%d", &N);
    for (int i=0; i<N; i++)
        scanf("%d", &data[i]);

    for (int i=0; i<N; i++) {
        for (int j=i; j<N; j++) {
```

```
            bool inc = true;
            for (int k=i+1; inc && k<=j; k++) {
                if (data[k] < data[k - 1])
                    inc = false;
            }
            if (inc && j-i+1 > maxLen )
                maxLen = j-i+1;
        }
    }
    printf("%d\n", maxLen);
}

/* faster version */
int main()
{
    int data[MAX];
    int N, maxLen = 1;
    scanf("%d", &N);
    for (int i=0; i<N; i++)
        scanf("%d", &data[i]);

    int len = 1;
    for (int i=1; i<N; i++) {
        if (data[i-1] <= data[i])
            len++;
        else
            len = 1;
        if (len > maxLen)
            maxLen = len;
    }
    printf("%d\n", maxLen);
}


5.
#include <stdio.h>
#define MAX 100
int main()
{
    int data[MAX];
    int N;
    scanf("%d", &N);
    for (int i=0; i<N; i++)  scanf("%d", &data[i]);

    int maxPrime = 0;
    for (int i=0; i<N; i++) {
        int value = 0;
        for (int j=i; j<N; j++) {
            value = value * 10 + data[j];
            if (value < 2) continue;
            bool prime = true;
            for (int k=2; prime && k*k<=value; k++) {
                if (value % k == 0)
                    prime = false;
            }
            if (prime) printf("%d ", value);
            if (prime && value > maxPrime )
                maxPrime = value;
        }
    }
```

```
    printf("\n%d\n", maxPrime);
}
```

6.

```
#include <stdio.h>
#define MAX 100
int main()
{
    int data[MAX];
    int N, K, maxLen=0;
    scanf("%d", &N);
    for (int i=0; i<N; i++) scanf("%d", &data[i]);
    scanf("%d", &K);

    for (int i=0; i<N; i++) {
        int sum = 0;
        for (int j=i; j<N; j++) {
            sum += data[j];
            if (sum <= K && j-i+1 > maxLen)
                maxLen = j-i+1;
        }
    }
    printf("%d\n", maxLen);
}

/* faster version */
int main()
{
    int data[MAX];
    int N, K, maxLen=0;
    scanf("%d", &N);
    for (int i=0; i<N; i++) scanf("%d", &data[i]);
    scanf("%d", &K);

    int sum = 0, i=0;
    for (int j=0; j<N; j++) {
        sum += data[j];
        while (sum > K) {
            sum -= data[i];
            i++;
        }
        if (j >= i && j-i+1 > maxLen)
            maxLen = j-i+1;
    }
    printf("%d\n", maxLen);
}
```

7.

```
#include <stdio.h>
#define MAX 100
int main()
{
    int s[MAX], t[MAX];
    int n = 0;
    FILE *fd = fopen("input7.txt", "r");
    while(!feof(fd)) {
        fscanf(fd, "%d %d", &s[n], &t[n]);
        n++;
    }
    fclose(fd);
```

```
    int maxLen = 0, maxi, maxj;
    for (int i=0; i<n; i++) {
        for (int j=i+1; j<n; j++) {
            int lateS = (s[i] <= s[j] ? s[j] : s[i] );
            int earlyT = (t[i] <= t[j] ? t[i] : t[j] );
            int len = ( lateS >= earlyT ? 0 : earlyT - lateS );
            if (len > maxLen) {
                maxLen = len;
                maxi = i;
                maxj = j;
            }
        }
    }
    printf("[%d, %d], [%d, %d]\n", s[maxi], t[maxi], s[maxj], t[maxj]);
}
```

8.

```
#include <stdio.h>
#define MAX 100
int main()
{
    int x1[MAX], y1[MAX], x2[MAX], y2[MAX];
    bool isVertical[MAX];
    int xx[MAX], yy[MAX];
    int nIntersection = 0;

    int n = 0;
    FILE *fd = fopen("input8.txt", "r");
    while(!feof(fd)) {
        fscanf(fd, "%d %d %d %d", &x1[n], &y1[n], &x2[n], &y2[n]);
        if (x1[n] == x2[n]) isVertical[n] = true;
        else isVertical[n] = false;
        n++;
    }
    fclose(fd);

    for (int i=0; i<n; i++) {
        for (int j=i+1; j<n; j++) {
            if (isVertical[i] && !isVertical[j]) {
                if (x1[j]<=x1[i]&&x2[j]>=x1[i]&&y1[i]<=y1[j]&&y2[i]>=y1[j] ) {
                    xx[nIntersection] = x1[i];
                    yy[nIntersection++] = y1[j];
                }
            }
            else if (!isVertical[i] && isVertical[j]) {
                if (x1[i]<=x1[j]&&x2[i]>=x1[j]&&y1[j]<=y1[i]&&y2[j]>=y1[i] ) {
                    xx[nIntersection] = x1[j];
                    yy[nIntersection++] = y1[i];
                }
            }
        }
    }
    /* insertion sort */
    for (int i=1; i<nIntersection; i++) {
        int tmpx = xx[i];
        int tmpy = yy[i];
        int j = i-1;
        while ( j>=0 && (xx[j] > tmpx || xx[j] == tmpx && yy[j] > tmpy )) {
            xx[j+1] = xx[j];
            yy[j+1] = yy[j];
```

```
            j--;
        }
        xx[j+1] = tmpx;
        yy[j+1] = tmpy;
    }
    for (int i=0; i<nIntersection; i++)
        printf("[%d, %d]\n", xx[i], yy[i]);
}
```

9.

```
#include <stdio.h>
int main()
{
    int hand[14] = { 0 };
    int tmp;
    for (int i=0; i<7; i++) {
        scanf("%d", &tmp);
        hand[tmp] = 1;
    }
    int sum = 0;
    for (int i=1; i<=13; i++) {
        if (hand[i] == 0) sum = 0;
        else sum++;
        if (sum == 5) {
            printf("YES\n");
            return 1;
        }
    }
    printf("NO\n");
}
```