

CP 111 Computer Programming

2/2554 Section B01/B02

Lab 7 Solution

1. Problem name: Avg_Std

```
#include <stdio.h>
#include <math.h>
int main()
{
    int N, sum, x, i;
    double avg, std, sum_sq;
    int data[100];

    N=0;
    sum=0;
    while(1)
    {
        scanf("%d", &x);
        if(x<0)
        {
            break;
        }
        sum=sum+x;
        data[N]=x;
        N=N+1;
    }

    avg=(double)sum/N;
    sum_sq=0.0;
    for(i=0; i<N; i++)
    {
        sum_sq=sum_sq+((data[i]-avg)*(data[i]-avg));
    }
    std=sqrt(sum_sq/N);
    printf("%.2f\n", avg);
    printf("%.2f\n", std);

    return 0;
}
```

2. Problem name: Max_Occurrence

```
#include <stdio.h>

int main()
{
    int i,x;
    int data_count[100];
    int max_i,max_count;

    for(i=0;i<100;i++)
        data_count[i]=0;

    while(1)
    {
        scanf("%d",&x);
        if(x<0)
        {
            break;
        }
        data_count[x]=data_count[x]+1;
    }

    max_i=-1;
    max_count=-1;
    for(i=0;i<100;i++)
    {
        if(data_count[i]>max_count)
        {
            max_i=i;
            max_count=data_count[i];
        }
    }

    printf("%d\n",max_i);
    printf("%d\n",max_count);

    return 0;
}
```

3. Problem name: String_length

```
#include <stdio.h>
#define MAX_STR_LEN 500
int main()
{
    char instr[MAX_STR_LEN+1];
    int i, len;

    gets(instr);
    len=0;
    i=0;
    while(instr[i]!=0)
    {
        if( (instr[i]>='a' && instr[i]<='z') ||
            (instr[i]>='A' && instr[i]<='Z') ||
            (instr[i]>='0' && instr[i]<='9') )
            len=len+1;
        i++;
    }
    printf("%d\n", len);

    return 0;
}
```

4. Problem name: Reverse_String

```
#include <stdio.h>
#define MAX_STR_LEN 500

int main()
{
    char instr[MAX_STR_LEN+1];
    char outstr[MAX_STR_LEN+1];
    int i, k, last;

    gets(instr);
    i=0;
    while(instr[i]!=0)
    {
        i++;
    }
    last=i-1;
    i=0;
    for(k=last; k>=0; k--)
    {
        outstr[i]=instr[k];
        i++;
    }
    outstr[i]=0;
    printf("%s\n", outstr);

    return 0;
}
```

5. Problem name: Max_Diff

```
#include <stdio.h>

int main()
{
    int i,j,N;
    int max_i,max_j,max_diff;
    int x[100];

    scanf("%d",&N);
    for(i=0;i<N;i++)
    {
        scanf("%d",&x[i]);
    }

    max_diff=-1;
    for(i=0;i<N;i++)
    {
        for(j=0;j<N;j++)
        {
            if(i!=j && x[i]-x[j]>max_diff)
            {
                max_diff=x[i]-x[j];
                max_i=i;
                max_j=j;
            }
        }
    }

    printf("%d\n",x[max_i]);
    printf("%d\n",x[max_j]);
    printf("%d\n",max_diff);

    return 0;
}
```