

## Some programs in C - Part 5

### Poisson Distribution Fitting

#### The C Program

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

int main()
{
    int x, f, n, N = 0;
    double mean = 0, fact = 1, px, ef;

    printf("INSERT OBSERVED FREQUENCY (-1 to break) FOR\n");

    for(x=0; x<100; x++)
    {
        printf("\tX = %d: ", x);
        scanf("%d", &f);
        if(f == -1) break;
        n = x;
        N += f;
        mean += x*f;
    }

    mean = mean/N;

    printf("\nESTIMATES : N = %d, MEAN = %lf", N, mean);

    printf("\n\nX\tP(X)\t\tExpected Frequency\n");

    for(x=0; x<=n; x++)
    {
        if(x > 0) fact = fact * x;
        px = exp(-mean) * pow(mean,x)/fact;
        ef = N*px;
        printf("\n%d\t%lf\t\t%g", x, px, ef);
    }
}
```

```
    return 0;  
}
```

## Output

INSERT OBSERVED FREQUENCY (-1 to break) FOR

X = 0: 20

X = 1: 26

X = 2: 13

X = 3: 8

X = 4: 3

X = 5: 1

X = 6: -1

ESTIMATES : N = 71, MEAN = 1.309859

X	P(X)	Expected Frequency
0	0.269858	19.1599
1	0.353476	25.0968
2	0.231502	16.4366
3	0.101078	7.17656
4	0.033100	2.35007
5	0.008671	0.615652