```
!Assignment 1
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program RNGDIST
    implicit none
    integer :: i, n, nbin, i_bin, f(100), io
    real :: x, x_max, binSize, sum, sumSq, mean, meanSq, variance
    open(unit=1,file="x.dat")
    open(unit=2,file="dist.dat")
    write(*,*) "Enter max value of x(x_max) and number of bins(nbin)"
    read(*,*) x_max, nbin
    f = 0.0
    n = 0
    sum = 0.0
    sumSq = 0.0
    binSize = x_max/nbin
    do
        read(1,*,iostat=io) x
        if(io < 0) exit
        if(io > 0) then
            write(*,*) "Error in input"
            exit
        end if
        n = n+1
        i_bin = int(x/binSize)+1
        f(i_bin) = f(i_bin)+1
        sum = sum+x
        sumSq = sumSq+x**2
    end do
    do i = 1, nbin
        write(2,100) i-binSize*0.5, f(i), f(i)/(n*binSize) !x, f(x), rho(x)
    end do
    mean = sum/n
    meanSq = sumSq/n
    variance = meanSq-mean**2
    write(*,110) "Mean", mean, "Variance", variance, "Standard deviation",
sqrt(variance)
100 format(F6.2,4X,I0,4X,F8.6)
110 format(3(/A,' = ',F10.6))
end program RNGDIST
```
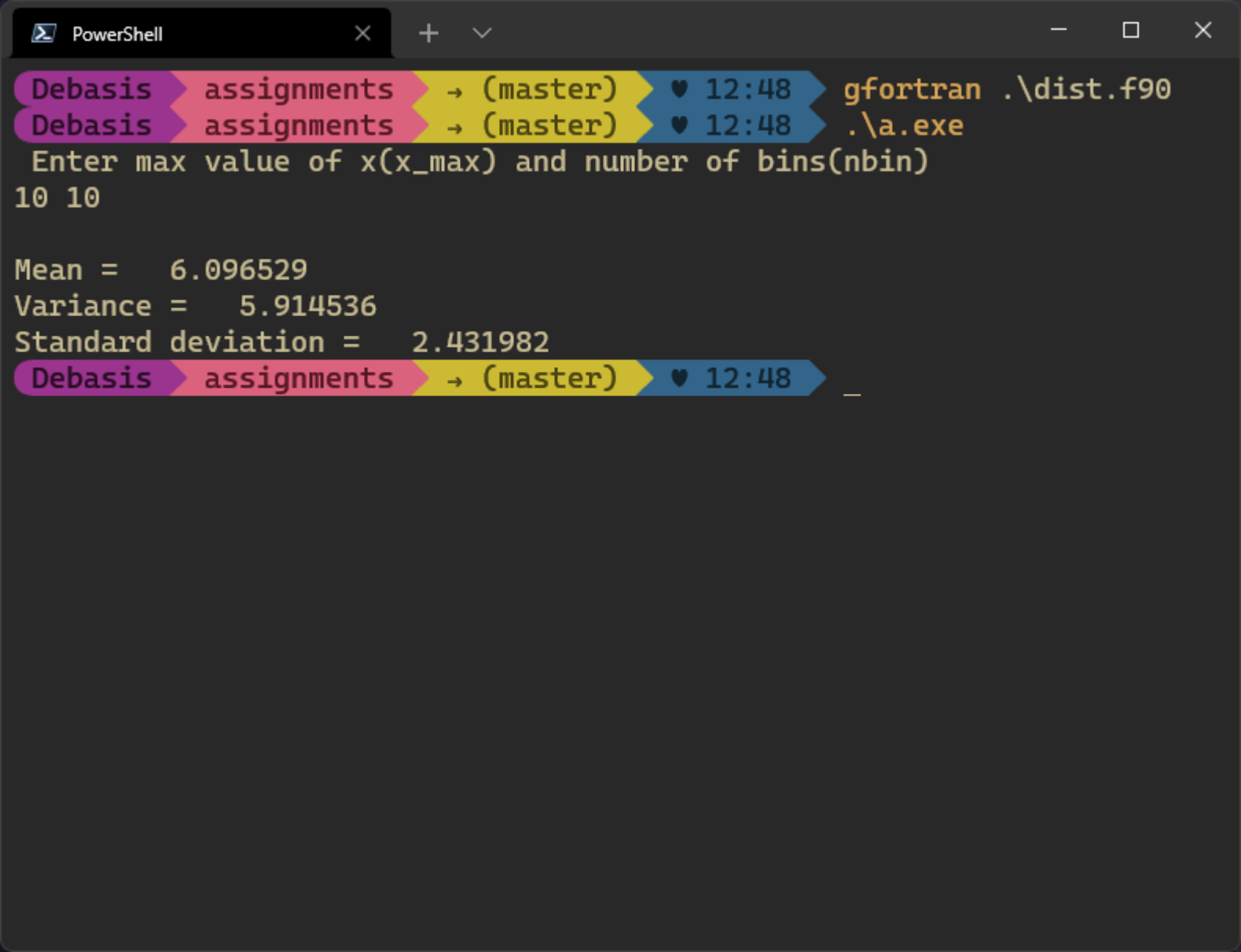
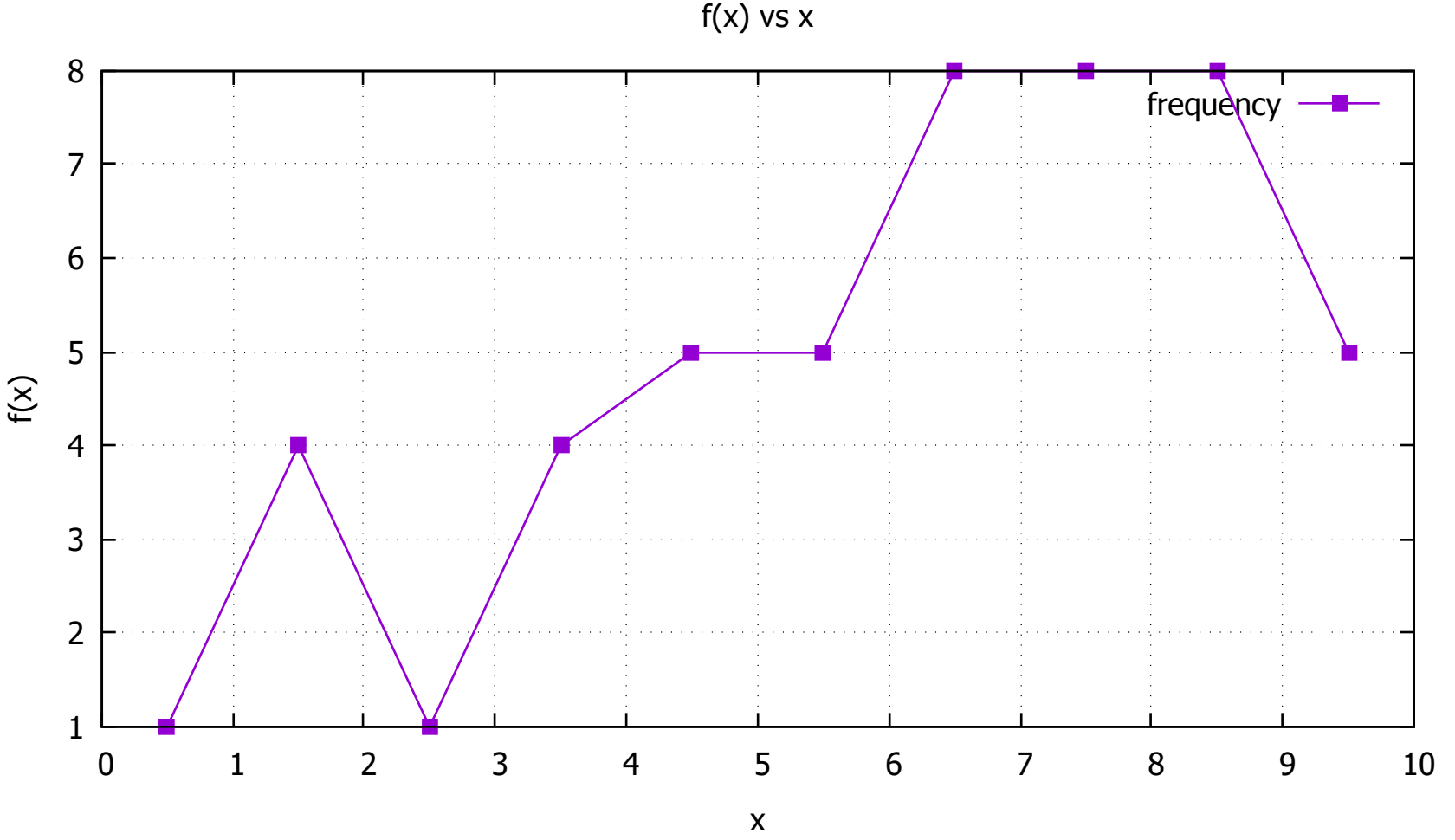
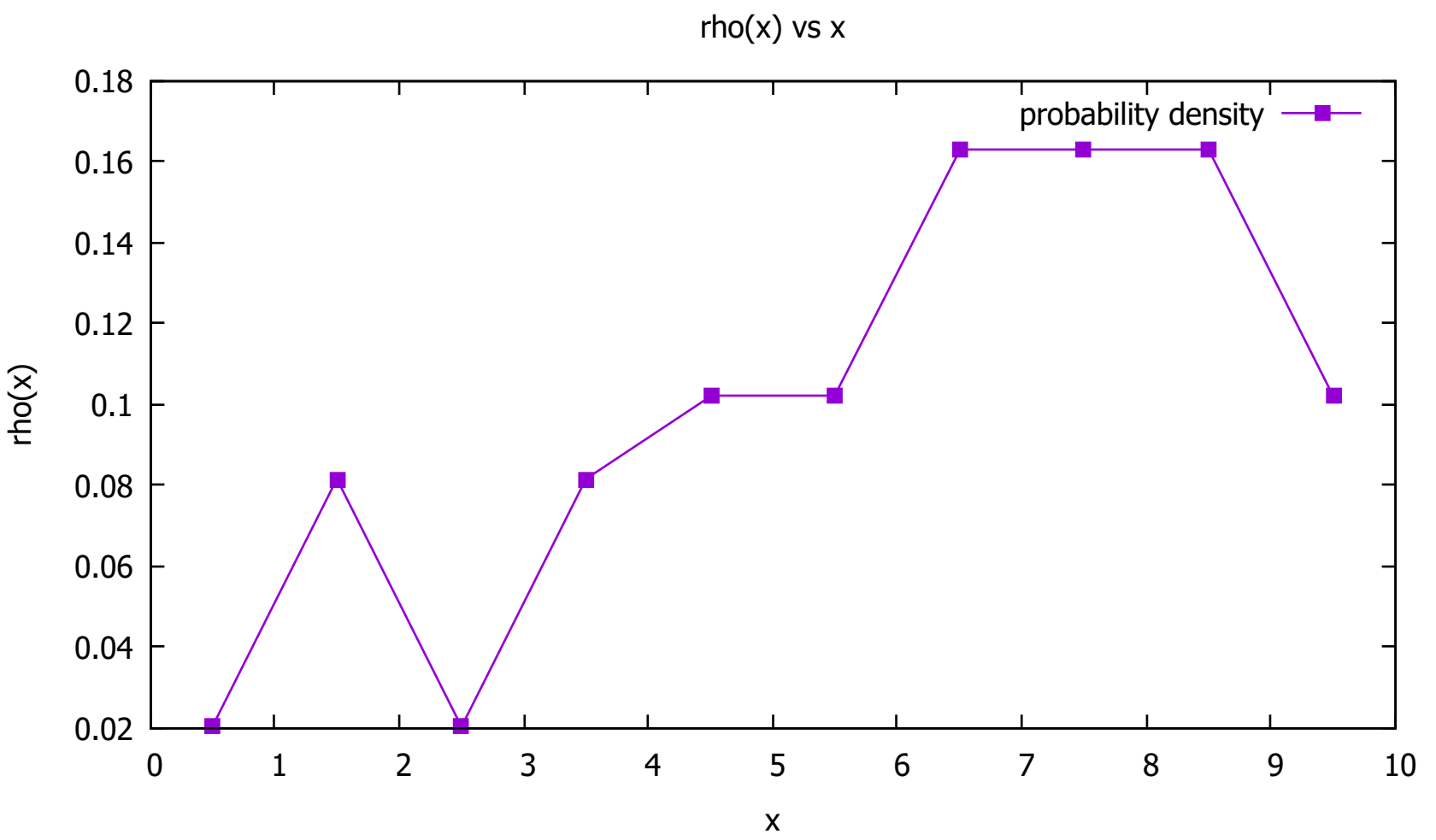


PowerShell
Debasis assignments → (master) ♥ 12:48 gfortran .\dist.f90
Debasis assignments → (master) ♥ 12:48 .\a.exe
Enter max value of x(x_max) and number of bins(nbin)
10 10
Mean = 6.096529
Variance = 5.914536
Standard deviation = 2.431982
Debasis assignments → (master) ♥ 12:48 _

```
0.50    1    0.020408
1.50    4    0.081633
2.50    1    0.020408
3.50    4    0.081633
4.50    5    0.102041
5.50    5    0.102041
6.50    8    0.163265
7.50    8    0.163265
8.50    8    0.163265
9.50    5    0.102041

```


f(x) vs x
frequency
f(x)
x
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10


rho(x) vs x
probability density
rho(x)
x
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1
2
3
4
5
6
7
8
9
10