

Exercise pag 24
Slide 1_Sampling

```
clear
n=10;
y=rand(n,1);
for i=1:n
    if y(i,1)<0.2;
        x(i,1)=1;
    end;
    if y(i,1)<0.5&y(i,1)>=0.2;
        x(i,1)=2;
    end;
    if y(i,1)>=0.5;
        x(i,1)=3;
    end;
end;

x1=x;
y=rand(n,1);
for i=1:n
    if y(i,1)<0.2 ;
        x(i,1)=1;
    end;
    if y(i,1)<0.5 &y(i,1)>=0.2;
        x(i,1)=2;
    end;
    if y(i,1)>=0.5;
        x(i,1)=3;
    end;
end;

x2=x;
z=(x1+x2)./2;
zbar=tabulate(z);
%bar(zbar(:,1),zbar(:,2));
probability=[0.04 0.12 0.29 0.3 0.25]';

sumvalue=[1 1.5 2 2.5 3 ]';

for j=1:length(sumvalue)
    ind=find(zbar(:,1)==sumvalue(j));
    zbarnew(j,1)=0;
    if ind
        zbarnew(j,1)=zbar(ind,3)./100;
    end;
end;
```

```

bar([sumvalue sumvalue],[zbarnew probability]);
legend('Observed','Expected', 'Location','northwest')
legend("boxoff")
title('Mean (X_1, X_2) nsim=10')
'poulation'
mean(x)
var(x)
%%%%%%
clear
figure
nsim=100;
n=2;
y=rand(n,nsim);
x=zeros(n,nsim);
for j=1:nsim
    for i=1:n
        if y(i,j)<0.2;
            x(i,j)=1;
        end;
        if y(i,j)<0.5&y(i,j)>=0.2;
            x(i,j)=2;
        end;
        if y(i,j)>=0.5;
            x(i,j)=3;
        end;
    end;
end;
zsum=mean(x);
'statistics, n=',n
mean(zsum)
var(zsum)
zbar=tabulate(zsum);
%bar(zbar(:,1),zbar(:,2));
probability=[0.04 0.12 0.29 0.3 0.25]';

probability=[0.04 0.12 0.29 0.3 0.25]';

sumvalue=[1 1.5 2 2.5 3 ]';

for j=1:length(sumvalue)
    ind=find(zbar(:,1)==sumvalue(j));
    zbarnew(j,1)=0;
    if ind
        zbarnew(j,1)=zbar(ind,3)./100;
    end;
end;

bar([sumvalue sumvalue],[zbarnew probability]);

```

```

legend('Observed','Expected','Location','northwest')
legend("boxoff")

```

```

title(['Distribution of the mean, n=',num2str(n)','
nsim=',num2str(nsim)])

```

```

legend("boxoff")
clear
figure
n=2;
nsim=1000;
y=rand(n,nsim);
x=zeros(n,nsim);
for j=1:nsim
    for i=1:n
        if y(i,j)<0.2
            x(i,j)=1;
        end;
        if y(i,j)<0.5&y(i,j)>=0.2;
            x(i,j)=2;
        end;
        if y(i,j)>=0.5;
            x(i,j)=3;
        end;
    end;
end;
zsum=mean(x);
'statistics, n=',n
mean(zsum)
var(zsum)
zbar=tabulate(zsum);
%bar(zbar(:,1),zbar(:,2));
probability=[0.04 0.12 0.29 0.3 0.25]';

```

```

sumvalue=[1 1.5 2 2.5 3 ]';

```

```

for j=1:length(sumvalue)
    ind=find(zbar(:,1)==sumvalue(j));
    zbarnew(j,1)=0;
    if ind
        zbarnew(j,1)=zbar(ind,3)./100;
    end;
end;

```

```

bar([sumvalue sumvalue],[zbarnew probability]);
legend('Observed','Expected','Location','northwest')
legend("boxoff")

```

```
title(['Distribution of the mean, n=', num2str(n), '  
nsim=', num2str(nsim)])
```