

Example-1.6:

```
S=1:6
```

```
S = 1x6
    1     2     3     4     5     6
```

```
E1=S(S>=4)
```

```
E1 = 1x3
    4     5     6
```

```
E2=S(mod(S,2)==0)
```

```
E2 = 1x3
    2     4     6
```

```
E3=S(mod(sqrt(S), 1)==0)
```

```
E3 = 1x2
    1     4
```

Example-1.8:

```
N=8;
bit=zeros(N,3);
for i=0:N-1
    bits(i+1, :)=[floor(i/4), mod(floor(i/2),2), mod(i,2)];
end
letters=['r', 'g'];
S=letters(bits + 1)
```

```
S = 8x3 char array
    'rrr'
    'rng'
    'ngr'
    'rgg'
    'grr'
    'grg'
    'ggr'
    'ggg'
```

```
R1=S(S(:,1)=='r', :)
```

```
R1 = 4x3 char array
    'rrr'
    'rng'
    'ngr'
    'rgg'
```

```
G1=S(S(:,1)=='g', :);
R2=S(S(:,2)=='r', :)
```

```
R2 = 4x3 char array
    'rrr'
    'rng'
    'grr'
    'grg'
```

```
G2=S(:,2)=='g', :)
```

```
G2 = 4x3 char array
  'ngr'
  'rgg'
  'ggr'
  'ggg'
```

```
R3=S(:,3)=='r', :)
```

```
R3 = 4x3 char array
  'rrr'
  'ngr'
  'grr'
  'ggr'
```

```
G3=S(:,3)=='g', :);
E=S((S(:,1)=='r') & (S(:,2)=='g') & (S(:,3)=='r'), :);
fprintf('R1 n G2 n R3 = { ''%s'' }\n', E);
```

```
R1 n G2 n R3 = { 'ngr' }
```

Example-1.10:

```
symbols = ['h', 't'];
outcomes = dec2bin(0:15) - '0';
coin_flips = symbols(outcomes + 1)
```

```
coin_flips = 16x4 char array
```

```
'hhhh'
'hhht'
'hhth'
'hhtt'
'hthh'
'htht'
'htth'
'httt'
'thhh'
'thht'
'thth'
'thtt'
'tthh'
'ttth'
'tttt'
```

```
B = cell(1,5);
for i = 1:size(coin_flips, 1)
    outcome = coin_flips(i, :);
    num_heads = sum(outcome == 'h');
    B{num_heads + 1} = [B{num_heads + 1}; outcome];
end
for i = 0:4
    fprintf('B%d (Outcomes with %d heads):\n', i, i);
    disp(B{i+1})
end
```

```

B0 (Outcomes with 0 heads):
tttt
B1 (Outcomes with 1 heads):
httt
thtt
ttht
ttth
B2 (Outcomes with 2 heads):
hhtt
htht
htth
thht
thth
tthh
B3 (Outcomes with 3 heads):
hhht
hhth
hthh
thhh
B4 (Outcomes with 4 heads):
hhhh

```

Example 1.11:

```
A=[B{1}; B{2}; B{3}]
```

```

A = 11x4 char array
'tttt'
'httt'
'thtt'
'ttht'
'ttth'
'hhtt'
'htht'
'htth'
'thht'
'thth'
'tthh'

```

Example-1.13:

```

S=1:6;
E1=S(S>=4);
E2=S(mod(S,2)==0);
E3=S(mod(sqrt(S), 1)==0);
P_E1=length(E1)/num_outcomes;
P_E2=length(E2)/num_outcomes;
P_E3=length(E3)/num_outcomes;
fprintf('P(Roll 4 or higher) = %.2f\n', P_E1);

```

```
P(Roll 4 or higher) = 0.50
```

```
fprintf('P(Roll an even number) = %.2f\n', P_E2);
```

```
P(Roll an even number) = 0.50
```

```
fprintf('P(Roll the square of an integer) = %.2f\n', P_E3);
```

$P(\text{Roll the square of an integer}) = 0.33$

Example-1.14: