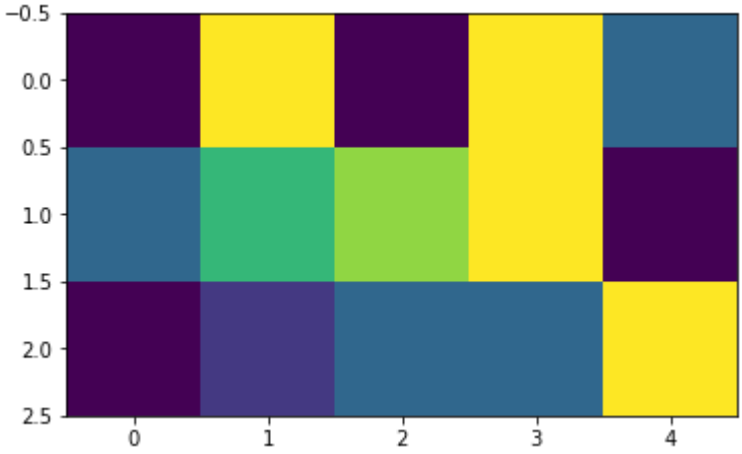
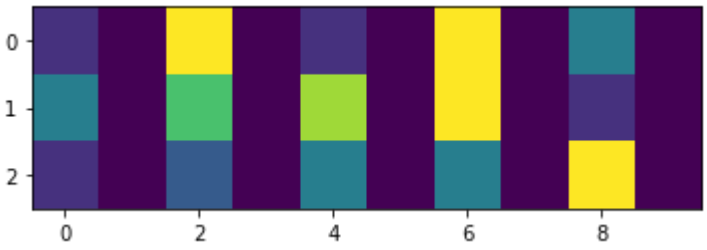
```
import matplotlib.image as img
import matplotlib.pyplot as plt
import numpy as np


img=[1,7,1,7,3,3,5,6,7,1,1,2,3,3,7]
i=np.reshape(img,(3,5))
print(i)
plt.imshow(i)
```

```
[[1 7 1 7 3]
 [3 5 6 7 1]
 [1 2 3 3 7]]
<matplotlib.image.AxesImage at 0x7f5f3125a320>
```



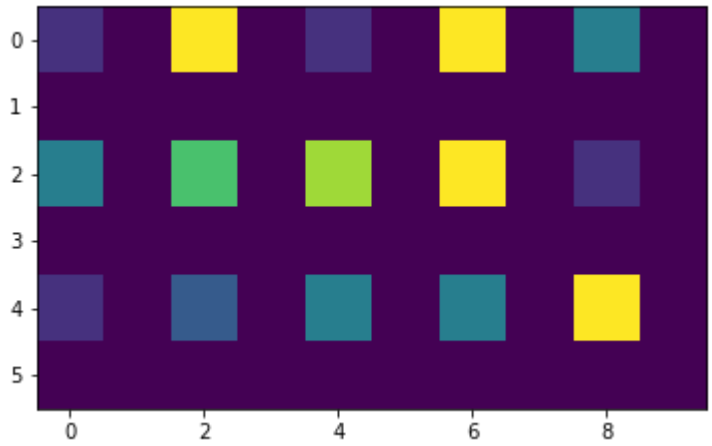

```
newcol=[]
for row in range(0, i.shape[0]):
    for col in range(0,i.shape[1]):
        newcol.append(i[row,col])
        newcol.append(0)

newcol=(np.reshape(newcol,(3,10)))
print(newcol)
plt.imshow(newcol)
```

```
[[1 0 7 0 1 0 7 0 3 0]
 [3 0 5 0 6 0 7 0 1 0]
 [1 0 2 0 3 0 3 0 7 0]]
<matplotlib.image.AxesImage at 0x7f5f28f258d0>
```



```
newrow=[]
for row in range(0,newcol.shape[0]):
  for col in range(0,newcol.shape[1]):
    newrow.append(newcol[row,col])
  for l in range(0,newcol.shape[1]):
    newrow.append(0)
zi=np.reshape(newrow,(6,10))
print(zi)
plt.imshow(zi)
```

```
[[1 0 7 0 1 0 7 0 3 0]
 [0 0 0 0 0 0 0 0 0 0]
 [3 0 5 0 6 0 7 0 1 0]
 [0 0 0 0 0 0 0 0 0 0]
 [1 0 2 0 3 0 3 0 7 0]
 [0 0 0 0 0 0 0 0 0 0]]
<matplotlib.image.AxesImage at 0x7f5f28f4df98>
```

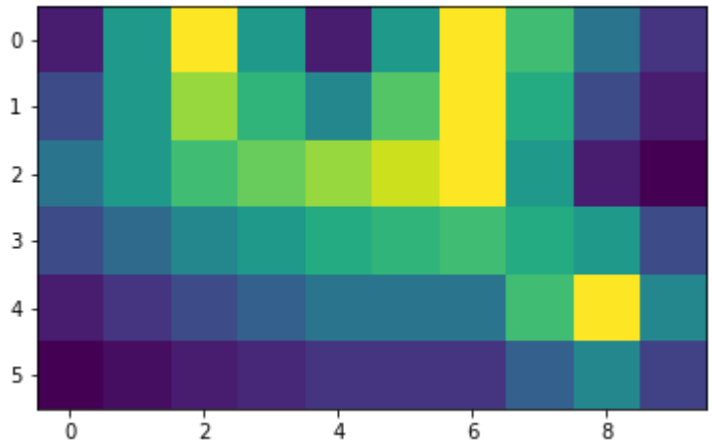



```
ni_col=[]
for row in range(0,zi.shape[0]):
    for col in range(0,zi.shape[1]):
        if(col%2==1 and col<zi.shape[1]-2):
            ni_col.append((zi[row,col-1]+zi[row,col+1])/2)
        elif(col%2==1 and col==zi.shape[1]-1):
            ni_col.append(zi[row,col-1]/2)
        else:
            ni_col.append(zi[row,col])
ni_col=(np.reshape(ni_col,(6,10)))
print(ni_col)
plt.imshow(ni_col)
```

```
[[1.  4.  7.  4.  1.  4.  7.  5.  3.  1.5]
 [0.  0.  0.  0.  0.  0.  0.  0.  0.  0. ]
 [3.  4.  5.  5.5 6.  6.5 7.  4.  1.  0.5]
 [0.  0.  0.  0.  0.  0.  0.  0.  0.  0. ]
 [1.  1.5 2.  2.5 3.  3.  3.  5.  7.  3.5]
 [0.  0.  0.  0.  0.  0.  0.  0.  0.  0. ]]
<matplotlib.image.AxesImage at 0x7f5f28e1cba8>
```


```
ni_row=[]
for row in range(0,ni_col.shape[0]):
    for col in range(0,ni_col.shape[1]):
        if(row%2==1 and row<ni_col.shape[0]-2):
            ni_row.append((ni_col[row-1,col]+ni_col[row+1,col])/2)
        elif(row%2==1 and row==ni_col.shape[0]-1):
            ni_row.append(ni_col[row-1,col]/2)
        else:
            ni_row.append(ni_col[row,col])
ni_row=(np.reshape(ni_row,(6,10)))
print(ni_row)
plt.imshow(ni_row)
```

```
[[1.   4.   7.   4.   1.   4.   7.   5.   3.   1.5 ]
 [2.   4.   6.   4.75 3.5  5.25 7.   4.5  2.   1.  ]
 [3.   4.   5.   5.5  6.   6.5  7.   4.   1.   0.5 ]
 [2.   2.75 3.5  4.   4.5  4.75 5.   4.5  4.   2.  ]
 [1.   1.5  2.   2.5  3.   3.   3.   5.   7.   3.5 ]
 [0.5  0.75 1.   1.25 1.5  1.5  1.5  2.5  3.5  1.75]]
<matplotlib.image.AxesImage at 0x7f5f28e01470>
```




```
plt.subplot(241),plt.imshow(i),plt.title("original")
plt.subplot(242),plt.imshow(ni_row),plt.title("zoom")
```

```
(<matplotlib.axes._subplots.AxesSubplot at 0x7f5f28da8a58>,
 <matplotlib.image.AxesImage at 0x7f5f28d3afd0>,
 Text(0.5, 1.0, 'zoom'))
```