```
import numpy as np


input_mat = np.array([[1,0,0,0,1],
              [0,1,0,1,0],
              [0,0,1,0,0],
              [0,1,0,1,0],
              [1,0,0,0,1]
              ])


filter1= np.array([[1,0,1],
          [0,1,0],
          [1,0,1]])


output_mat = []
for i in range(3):
  temp = []
  for j in range(3):
    temp.append(np.sum(input_mat[i:i+3,j:j+3]*filter1))
  output_mat.append(temp)


output_mat

## Pretty Priniting
print("[", end="")
for idx, i in  enumerate(output_mat):
  print(i, end="" if idx == 2 else "\n")
print("]", end=" ")
```

```
[[3, 0, 3]
 [0, 5, 0]
 [3, 0, 3]]
```

```
filter2 = np.array([[1, 0, 0],
                    [0, 1, 0],
                    [0, 0, 1]])


output_mat2 = []
for i in range(3):
  temp = []
  for j in range(3):
    temp.append(np.sum(input_mat[i:i+3,j:j+3]*filter2))
  output_mat2.append(temp)


## Pretty Priniting
print("[", end="")
for idx, i in  enumerate(output_mat2):
  print(i, end="" if idx == 2 else "\n")
print("]", end=" ")
```

```
[[3, 0, 1]
 [0, 3, 0]
 [1, 0, 3]]
```

```
filter3 = np.array([[0, 0, 1],
                    [0, 1, 0],
                    [1, 0, 0]])


output_mat3 = []
for i in range(3):
  temp = []
  for j in range(3):
    temp.append(np.sum(input_mat[i:i+3,j:j+3]*filter3))
  output_mat3.append(temp)


## Pretty Priniting
print("[", end="")
for idx, i in  enumerate(output_mat3):
  print(i, end="" if idx == 2 else "\n")
print("]", end=" ")
```

```
[[1, 0, 3]
 [0, 3, 0]
 [3, 0, 1]]
```

Start coding or generate with AI.