Assignment No.5

Title: Bidirectional associative memory with two pair of vectors.

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In [1]:
```
import numpy as np
```

In [5]:
```
# define two pairs of vectors
x1 = np.array([1, 1, 1, -1])
y1 = np.array([1, -1])
x2 = np.array([-1, -1, 1, 1])
y2 = np.array([-1, 1])
```

In [7]:
```
# compute weight matrix W
W = np.outer(y1, x1) + np.outer(y2, x2)
```

In [11]:
```
# define BAM function
def bam(x):
    y = np.dot(W, x)
    y = np.where(y >= 0, 1, -1)
    return y
```

In [13]:
```
# test BAM with inputs
x_test = np.array([1, -1, -1, -1])
y_test = bam(x_test)
```

In [15]:
```
# print output
print("Input x: ", x_test)
print("Output y: ", y_test)
```

```
Input x:  [ 1 -1 -1 -1]
Output y:  [ 1 -1]
```

In [ ]:
```

```