Output table

_____output_PAM_out = -PAM4-

clk_in = 0: rst_in = 1: output_PAM_out = 0

clk_in = 1: rst_in = 1: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 1

clk_in = 0: rst_in = 0: output_PAM_out = 1

clk_in = 1: rst_in = 0: output_PAM_out = 1

clk_in = 0: rst_in = 0: output_PAM_out = 1

clk_in = 1: rst_in = 0: output_PAM_out = 2

clk_in = 0: rst_in = 0: output_PAM_out = 2

clk_in = 1: rst_in = 0: output_PAM_out = 2

clk_in = 0: rst_in = 0: output_PAM_out = 2

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 1

clk_in = 0: rst_in = 0: output_PAM_out = 1

```
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
```

```
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 1:  output_PAM_out = 0
# clk_in = 1: rst_in = 1:  output_PAM_out = 0
# clk_in = 0: rst_in = 1:  output_PAM_out = 0
# clk_in = 1: rst_in = 1:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
```

```
# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 2

# clk_in = 0: rst_in = 0:  output_PAM_out = 2

# clk_in = 1: rst_in = 0:  output_PAM_out = 2

# clk_in = 0: rst_in = 0:  output_PAM_out = 2

# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 0

# clk_in = 0: rst_in = 0:  output_PAM_out = 0

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 3
```

```
# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 2

# clk_in = 0: rst_in = 0:  output_PAM_out = 2

# clk_in = 1: rst_in = 0:  output_PAM_out = 2

# clk_in = 0: rst_in = 0:  output_PAM_out = 2

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 2

# clk_in = 0: rst_in = 0:  output_PAM_out = 2

# clk_in = 1: rst_in = 0:  output_PAM_out = 2

# clk_in = 0: rst_in = 0:  output_PAM_out = 2

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 1

# clk_in = 0: rst_in = 0:  output_PAM_out = 1

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3

# clk_in = 1: rst_in = 0:  output_PAM_out = 3

# clk_in = 0: rst_in = 0:  output_PAM_out = 3
```

```
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
```

```
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 1
# clk_in = 0: rst_in = 0:  output_PAM_out = 1
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 3
# clk_in = 0: rst_in = 0:  output_PAM_out = 3
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 2
# clk_in = 0: rst_in = 0:  output_PAM_out = 2
# clk_in = 1: rst_in = 0:  output_PAM_out = 0
# clk_in = 0: rst_in = 0:  output_PAM_out = 0
```

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

clk_in = 0: rst_in = 0: output_PAM_out = 0

clk_in = 1: rst_in = 0: output_PAM_out = 0

Summary

- This design takes in Manchester code and converts it to PAM4 data.
- There are 2 modules inside the design.
- The first module converts the Manchester to NRZ
- The second module converts the NRZ data to PAM4 data.