

## USING PYTHON

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# Binary Representation of Images using Python

Here is a Python program that turns a binary number into an image. The program converts a '1' into a star and a '0' into a space:

0 = " "	1 = "*"
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```
#get a binary number from the user
img_in = input("Enter your b&w bitmap image: ")
#initially, there is no output
img_out = ""

#loop through each character in the binary input
for character in img_in:

    #add a star (*) to the output if a 1 is found
    if character == "1":
        img_out = img_out + "*"
    #otherwise, add a space
    else:
        img_out = img_out + " "

#print the image to the screen
print(img_out)
```

Fill out this table, to record what image is printed when you enter some binary numbers. You can also enter some of your own.

Input	Output
11001100	
10101010	

**? Challenge**

Modify your program so that it has a display width of 6 characters. You could create a new variable called “position”, and add 1 to it for every character the user enters, printing a “newline” whenever the position reaches 6.

Your program should now work like this:

```
>>>
Enter your b&w bitmap image: 111111100001111111
*****
*      *
*****
```

Fill out this table, to record what image is printed when you enter some 2-bit binary numbers. How many different shapes can you make?

Input	Output
111111100001111111	A hollow rectangle.
	A triangle.

**? Challenge**

Can you make a ‘colour’ display, by using 2 binary bits to store each colour?

00 = “ ”	01 = “.”	10 = “~”	11 = “*”
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A user could then type in something like “00 01 10 11 10 01 00”, which would print “.~\*~.”

You may need to use this line in your code:

```
for char in img_in.split():
```