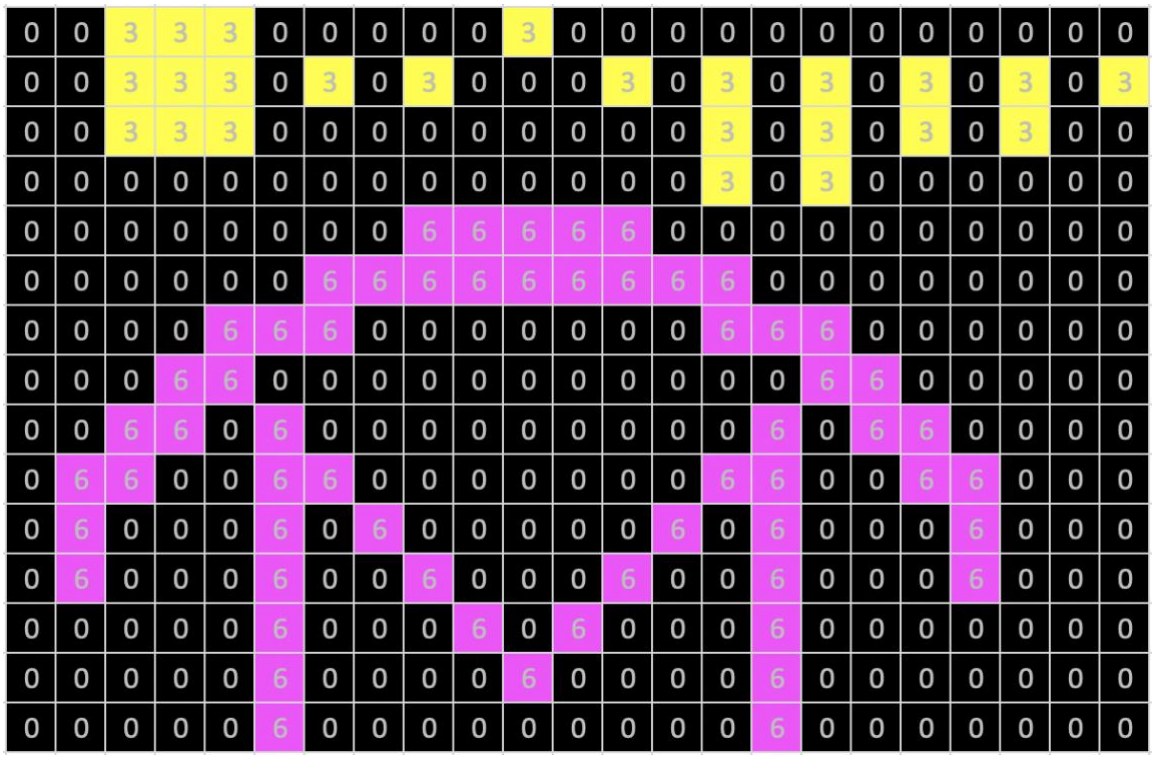
# Find the picture in this radio message transmitted to the stars

Below is how the picture might look if you chose the same colours as the key: black, yellow and purple.




At the top is a *representation* of our Solar System. On the left is the Sun and then, in order, the planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto. This message was originally sent on 16 November 1974 and at that time Pluto was classified as a planet, so that's why there are nine. If we sent the same message now we'd have to miss off Pluto.

Earth is not in line with the other planets. That says "here's where this message came from". Earth does line up with the middle of the purple picture at the bottom. That says "this is the telescope that was used to send this message from Earth".

To be very precise *this* coloured version of the Arecibo Message isn't *binary* because it's not just formed of 1s and 0s - we've used other numbers to give it some colour. The original message was sent by radio waves at very high frequency - too high for humans to hear but just right to be picked up by another radio telescope (if the aliens have one of course!). It was sent in binary with the 1s and 0s sent as slight changes in the radio message. "1s" were sent by tuning the radio frequency upwards, the "0s" by slightly lowering it. A binary message means you can send it in *any* way as long as you have two different ways of saying ON or OFF. You could send this message by two different audio tones, by flashing a torch light on and off, by raising or lowering a flag.

The original message was a long unbroken string of "1s" and "0s" but the picture could only be seen by splitting it into a grid with 23 columns and 73 rows. How many bits did it contain?

Answer: The message contained one thousand, six hundred and seventy nine bits.

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