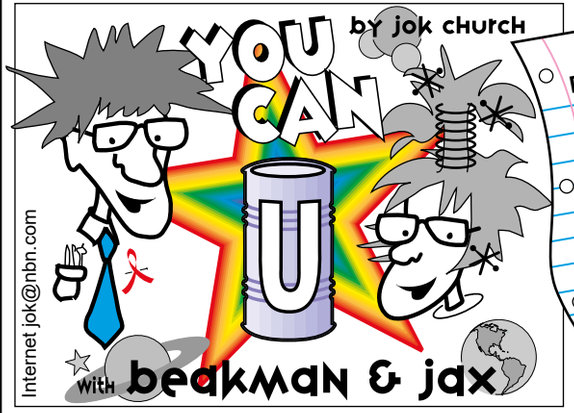
8-1-93 You Can Black & White
Universal Press Syndicate



Dear Beakman,

How does a computer work?

Arthur Bond
Cockeysville, Maryland

Beakman or Jax,
P.O. Box 30177
Kansas City, MO 64112
Send your question & address.

Dear Arthur,

Computers are very complicated things. How they work is really hard to explain in the space of a comic strip. But, I can give you a new way to think about computers. *You Can* think about them and they cannot think about you!

Computers are just machines that follow instructions we give them. We call the instructions a *program.* That means a computer is like a program-*player.* And the computer turns into anything – any kind of machine – we can tell it to.

With the right program, a computer can be a typewriter, a game, a musical instrument, or even a telescope. It can be any kind of machine we can program it to be. This is why the job of being a computer programmer is such a big deal.

Here's a secret: I don't use a pencil to draw this comic. I use a computer that has been turned into a drawing machine by the programs I play on it.

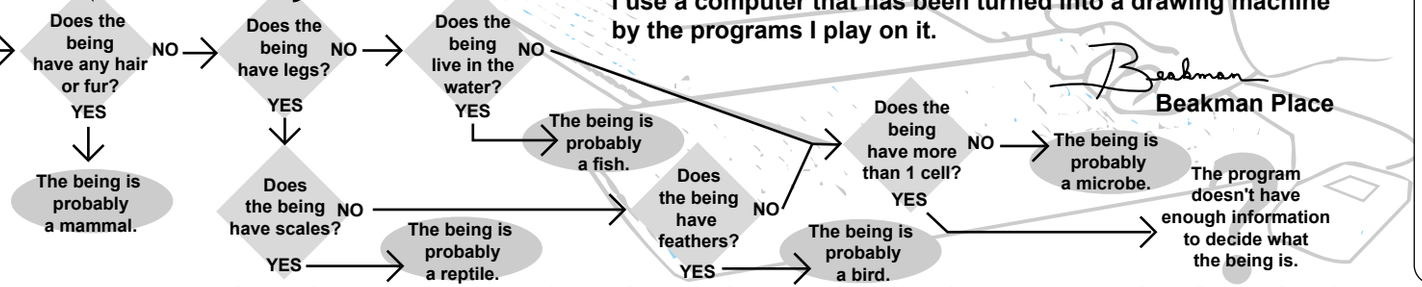
Beakman

Beakman Place

A BUNCH OF YES/NO SWITCHES

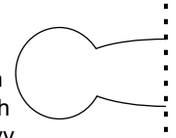
I have a living being here. What kind of creature is it?

Computers are just lots and lots of switches that answer yes/no, on/off kinds of questions.

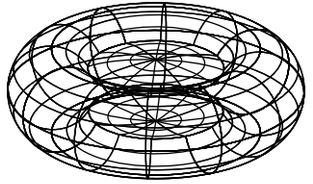


computer art

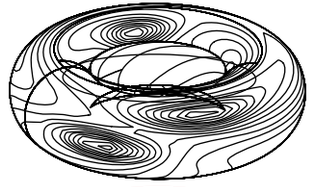
I want to draw a red blood cell. I start by drawing this shape on the computer. It's really a bunch of math that describes this curvy thing.



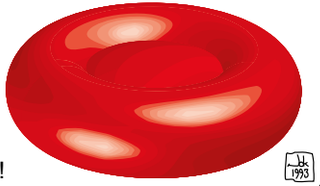
Next, I tell the computer program to spin the shape around the dotted line. I get this thing that looks like a bagel-shaped bird cage.



Now I tell the program to pretend the bird-cage-thing has a shiny surface and that there are 2 lights shining on it. What does it look like now?



Lastly, each weird little area is given a color that represents how light or dark it would be if a light was shining on it. The areas together turn out to be a good drawing of a red blood cell!



P.S. from Jax: When a mistake is written into a program, it's called a *bug*. The first *bug* was really a bug. A moth got caught in a switch in an early computer. Beakman's program has bugs, too. Try it with a moth or a snake as your being.