

## Bug Reporting Exercise

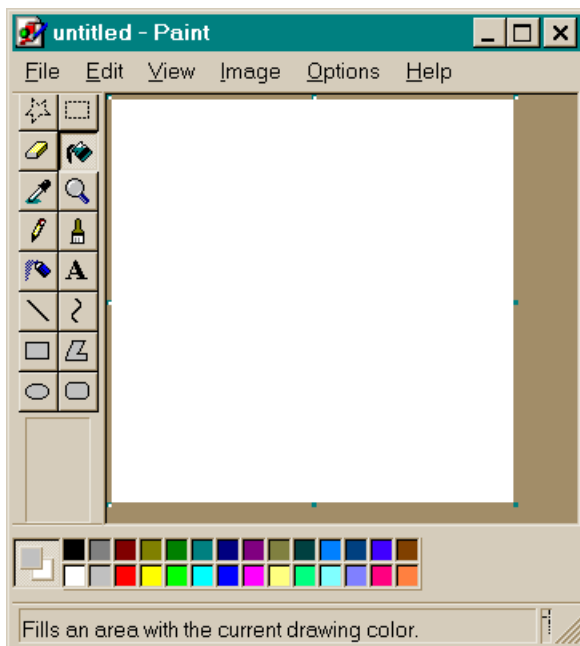
The following group of slides come from Windows Paint 95. You won't be able to replicate this bug in recent versions of Windows Paint because it's been fixed.


Please treat all of the steps shown in these screen shots as if they were fully reproducible.

In case you aren't familiar with paint programs, the key idea is that you lay down dots. For example, when you draw a circle, the result is a set of dots, not an object. If you were using a draw program, you could draw the circle and then later select the circle, move it, cut it, etc. In a paint program, you cannot select the circle once you've drawn it. You can select an area that includes the dots that make up the circle, but that area is simply a bitmap and none of the dots in it have any relationship to any of the others.

### SCREEN 1

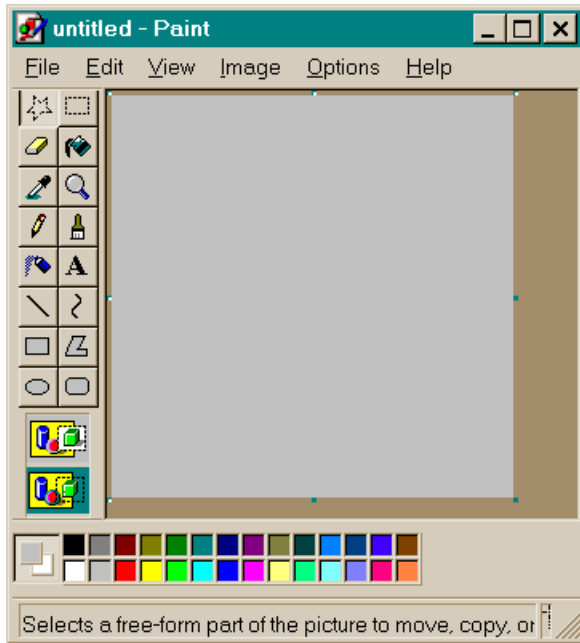
Here's the opening screen. The background is white.




The first thing that we'll do is select the Paint Can 

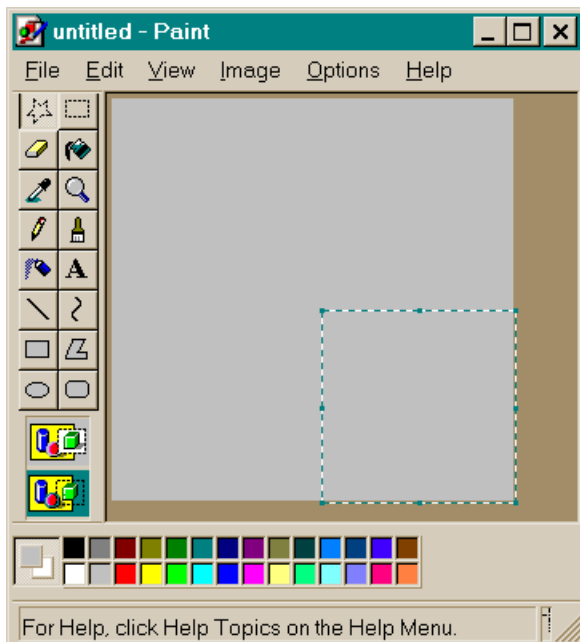
We'll use this to lay down a layer of grey paint on top of the background. Then, when we cut or move an area, we'll see the white background behind what was moved.

## SCREEN 2



The star  in the upper left corner is a freehand selection tool. After you click on it, you can trace around any part of the picture. The tracing selects that part of the picture. Then you can cut it, copy it, move it, etc.

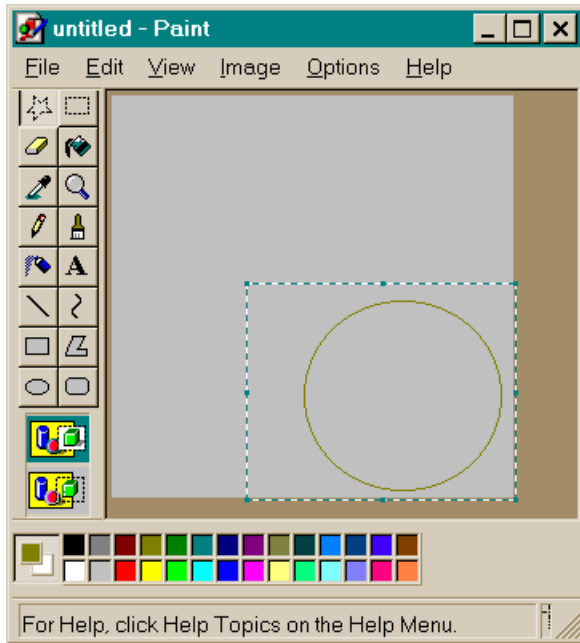
## SCREEN 3



This shows an area selected with the freehand selection tool. The bottom right corner is selected. (The dashed line surrounds the selected area.)

***NOTE: The actual area selected might not be perfectly rectangular. The freehand tool shows a rectangle that is just big enough to enclose the selected area. For our purposes, this is not a bug. This is a design decision by Microsoft.***

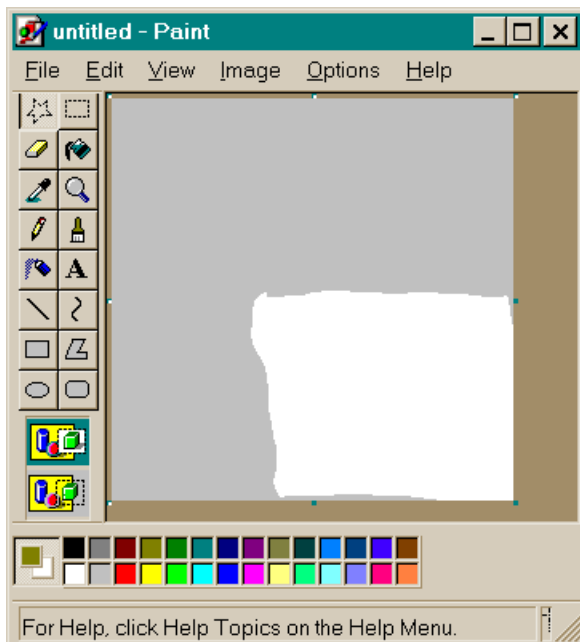
#### SCREEN 4



Now, we draw a circle (so you can see what's selected), then use the freehand select tool to select the area around it.

When you use the freehand selection tool, you select an area by moving the mouse. The real area selected is not a perfect rectangle. The rectangle just shows us where the selected area is.

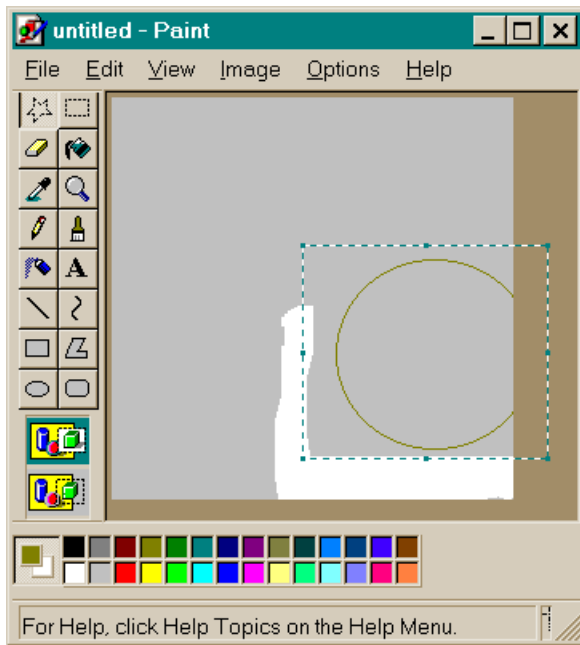
#### SCREEN 5



Now we cut the selection. (To do this, press Ctrl-X.)

The jagged border shows exactly the area that was selected.

## SCREEN 6

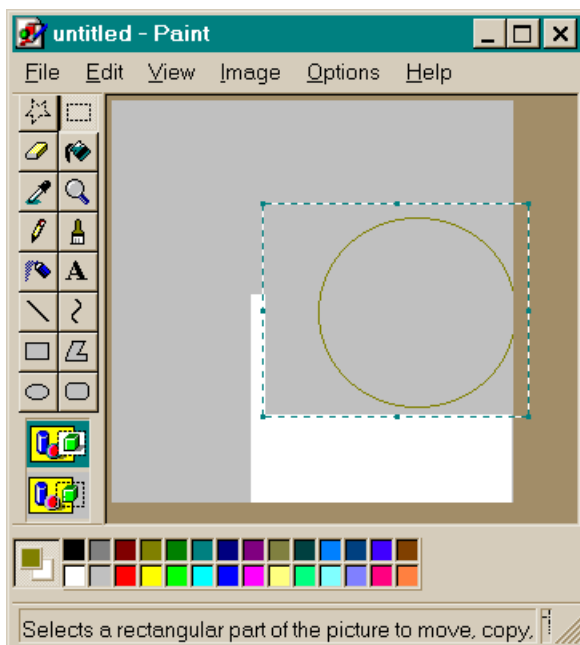


Next, select the area around the circle and drag it up and to the right.

This works.

Now, exit the program, start the program again, paint the screen grey, and draw the circle in the lower right. **We'll do these steps with every test from here on.**

## SCREEN 7



This time, we'll try the Rectangular Selection tool.

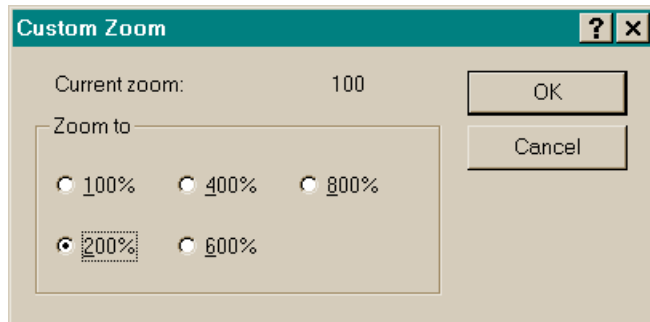
With this one, if you move the mouse to select an area, the area that is actually selected is the smallest rectangle that encloses the path that your mouse drew.

So, draw a circle, click the Rectangular Selection tool, select the area around the circle and move it up. It works.

Well, this was just too boring, because everything is working. When you don't find a bug while testing a feature, one tactic is to keep testing the feature but combine it with some other test.

In this case, we'll try Zooming the image. When you zoom 200%, the picture itself doesn't change size, but the display doubles in size. Every dot is displayed as twice as tall and twice as wide.

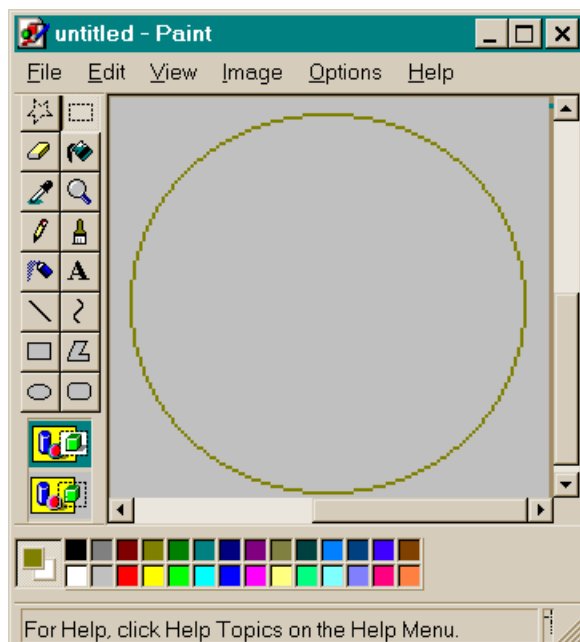
#### SCREEN 8



Bring up the Custom Zoom dialog, and select 200% zoom, click OK.

Our standard test sequence now starts like this: Exit the program, start the program again, paint the screen grey, draw the circle in the lower right, and zoom 200%. **We'll do these steps with every test from here on.**

#### SCREEN 9

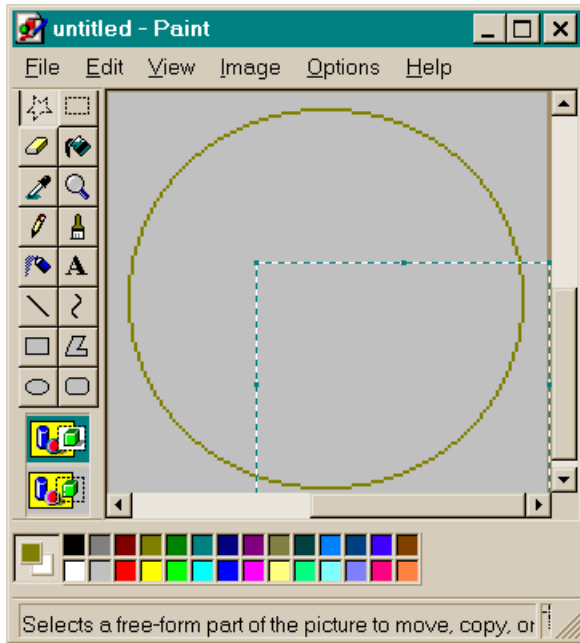


It worked. The paint area is displayed twice as tall and twice as wide.

We're now focused on the lower quadrant of the paint area, the circle that we drew in the bottom right corner.

To see the rest, we could move the scroll bars up or left.

SCREEN 10

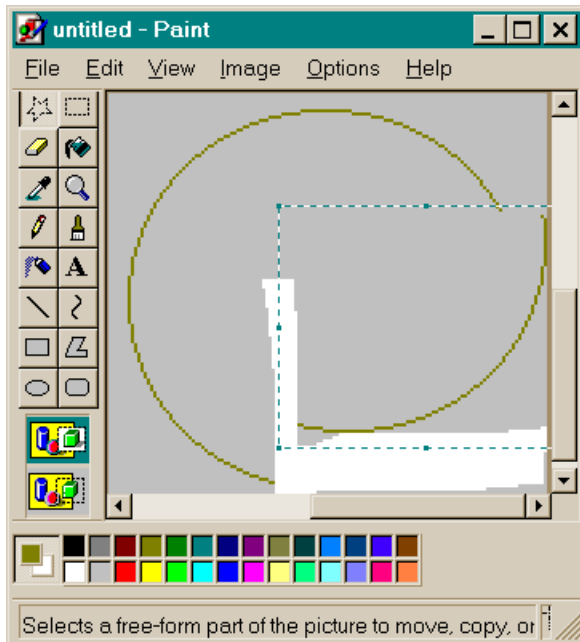


Select part of the circle using the freehand selection tool. We'll try the move and cut features.

**Cutting fails.**

When we try to cut the selection (with CTRL-X), the dashed line disappears, but nothing goes away.

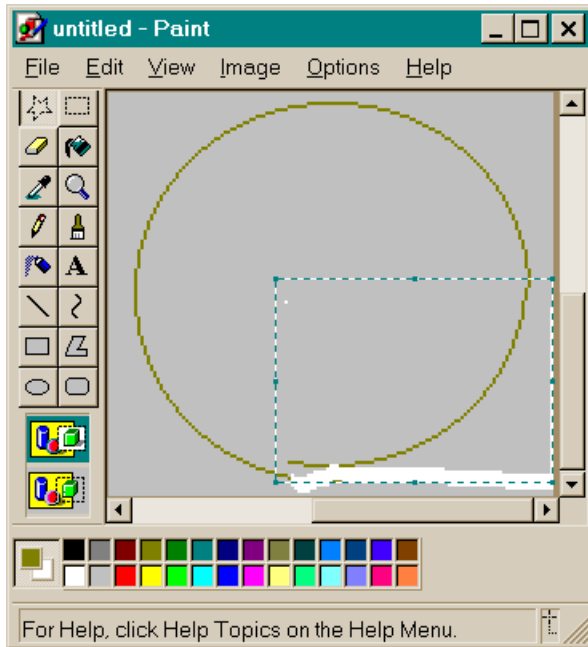
SCREEN 11



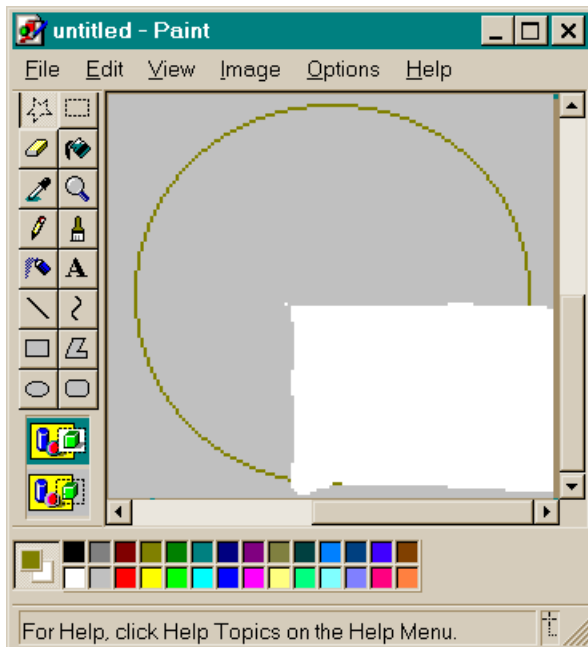
Let's try another test. This time, we select the area, but then instead of trying to cut it, we drag the area up and to the right.

That works.

SCREENS 12 and 13



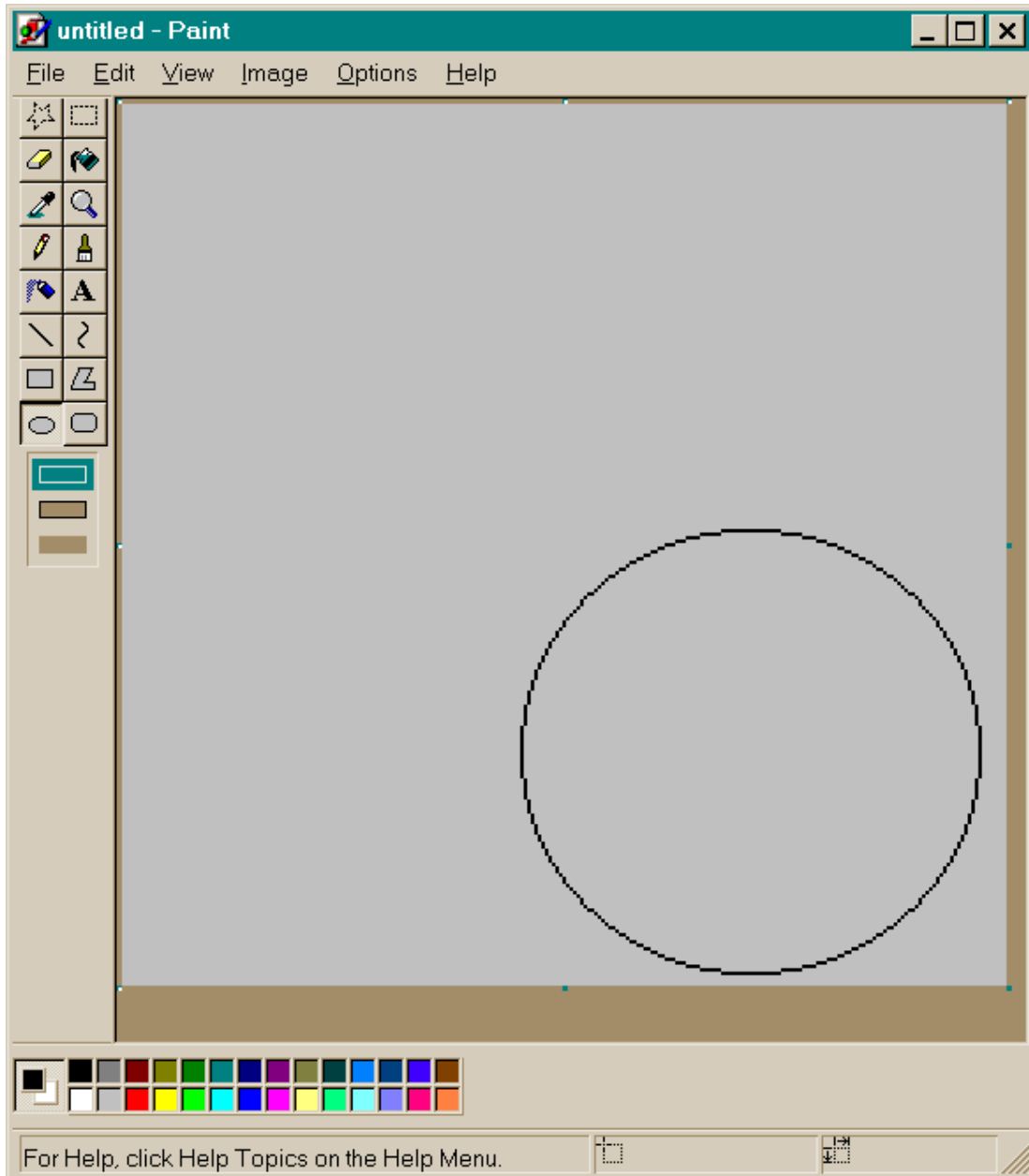
In this test, we select the area and move it a bit.



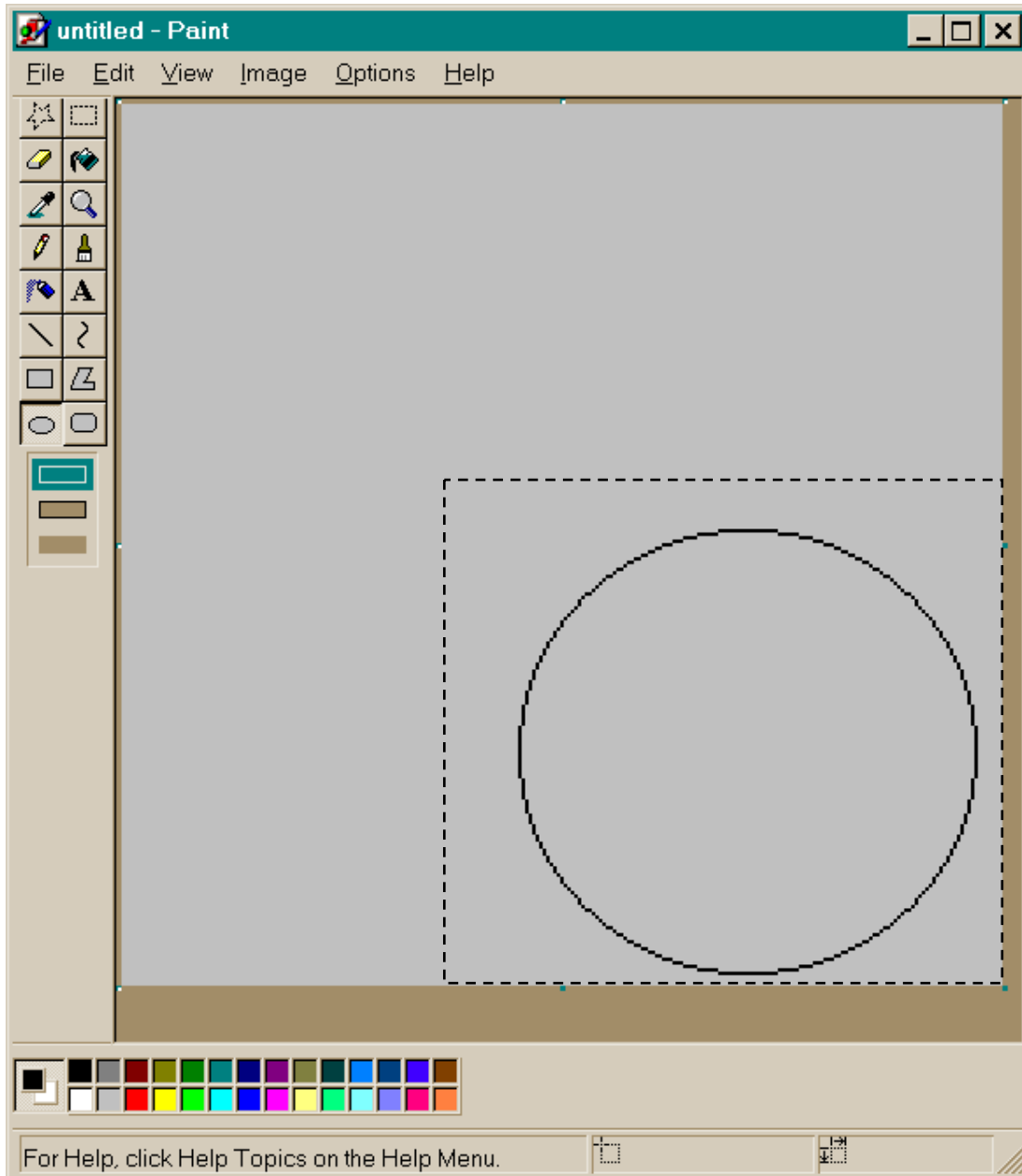
THEN press Ctrl-X to cut.

**This time, cutting works.**

SCREEN 14

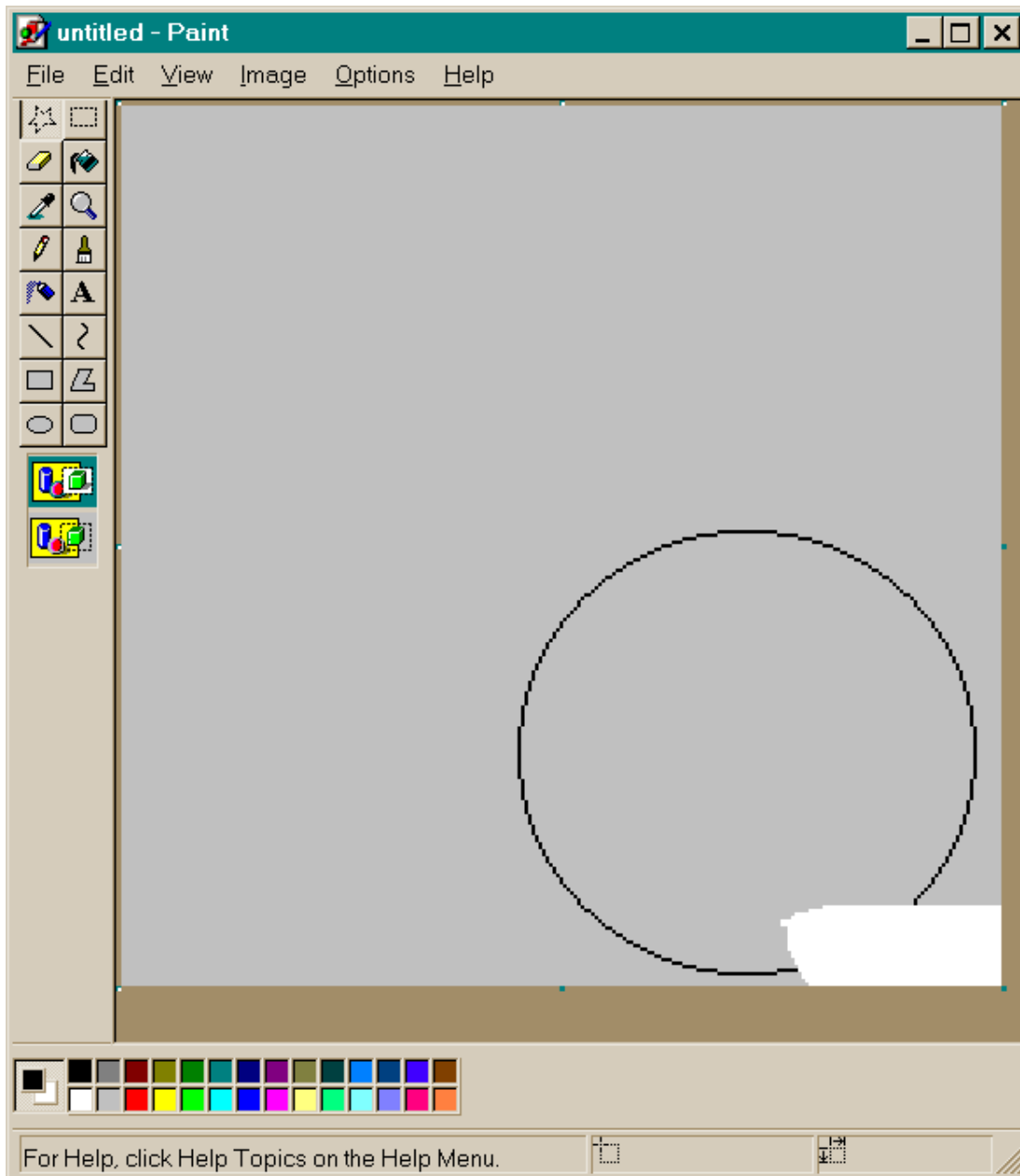


The last result was odd, but it's hard to tell what happened. Cutting worked, then it failed, then it worked. In the last few tests, after zooming, we were only looking at the bottom corner of the paint area. Let's stretch the window (maybe we have to move the test to another machine with a bigger monitor) so that we can see the entire paint area.



Selecting the circle seems to work

SCREEN 16



But when you press Ctrl-X to cut the circle, the program cuts the wrong area.

## YOUR TASK

**1. Suppose this is all of the investigation that you have time to do before reporting this behavior. Write and submit the Problem Summary for the bug report.** (The problem summary is a 50-70 character (8-12 word) description of the problem. Many people will see ONLY this part of your bug report.)

**1a. Review and critique summaries from two other students**

**2. If you had time to do more follow-up tests, what would you do, and why?**

**2a. Review and critique the follow-up suggestions from two other students**

You might find the following table useful for organizing your thoughts.

<b><u>Observed Failure</u></b>	<b><u>Critical conditions</u></b>
<b><u>Other possibly-relevant conditions</u></b>	<b><u>Notes</u></b>