

Mr. Giansante



C++ Programming
Etch-a-Sketch

August 2018

Etch-a-Sketch



Design a C++ program that simulates an Etch-a-Sketch™.

The Etch-A-Sketch is a plastic tablet that lets you make designs by turning knobs that control a point (called a stylus). The left and right knobs control horizontal and vertical rods, moving the stylus where the two rods meet. When the stylus moves, it scrapes the screen, which is coated with a mixture of aluminum powder and plastic beads, leaving the line you see. The first Etch-A-Sketch was sold in 1960. Through television advertising it went on to become one of the most popular toys ever made.

The user should be able to control the stylus by using the [W][A][S][D] keys.

The user should also be able to use [R] to Reset the screen and [Q] to Quit.

Additionally, you could add a system (ex. [1], [2], [3], etc.) for the user to change the colour of the drawing.

Libraries to Include

You will need to include the following libraries:

```
#include <winbgim.h>
#include <conio.h>
```

Variables

You will need two variables to keep track of the current position of the drawing dot.

```
int x;
int y;
```

Capturing Input from the Keyboard

In order to "capture" key presses

```
char choice;
choice = getch();
```

Note: the value stored in the variable choice will be the ASCII code for the letter key pressed. An ASCII Code table is available on my website.

```
// User chose 'a' or 'A' ie. Left
if(choice == 65 || choice == 97)
{
    // Only move them left if they are not
    // at the left edge of the screen
    if(x > 1)
    {
        x = x - 1;
    }
}
```

Etch-a-Sketch

The Reset Screen Function

The reset() function:

1. Clears the graphics area
2. Resets the colors
3. Sets the variables `x` and `y` to point to the center of the drawing area and places a dot in that location
4. Displays some text at the top of the screen
5. Draws a rectangle around the drawing area

```
void reset()
{
    cleardevice();

    setbkcolor(0); // Black
    setcolor(15); // white

    x = 200;
    y = 200;
    putpixel(x, y, 15);

    outtextxy(5, 5, "Etch-a-Sketch ~ [W], [A], [S], [D], [R]eset, [Q]uit, ");

    setcolor(4);
    rectangle(0,19,size-1,size-1);
}
```

Etch-a-Sketch



Learning Outcomes

Programming Concepts and Skills

- A1. demonstrate the ability to use different data types, including one-dimensional arrays, in computer programs
- A2. demonstrate the ability to use control structures and simple algorithms in computer programs
- A3. demonstrate the ability to use subprograms within computer programs
- A4. use proper code maintenance techniques and conventions when creating computer programs

Software Development

- B1. use a variety of problem-solving strategies to solve different types of problems independently and as part of a team
- B2. design software solutions to meet a variety of challenges
- B3. design algorithms according to specifications
- B4. apply a software development life-cycle model to a software development project

Please fill out all the information in this column using a pen before getting this assignment marked.

Name

_____ _____
Date Class

Academic Honesty

The work I am submitting is completely my own creation and has not been copied from anyone else's work. If I have received help on this project, the names of those who have assisted are listed below.

Signature

Pre-Marking

The following people have pre-marked this assignment:
(minimum of two)

User Interface

- Appropriate Title, Author Information, etc.
- Efficient and Esthetically-Pleasing User Interface
- Spelling and Grammar are correct

Code / Programming Style

- Variables are declared and logically named
- Code is commented where appropriate
- Code is indented and spaced to show structure
- Code is efficient

Work Ethic / Problem Solving Skills

- Problem Solving Skills are demonstrated
- Makes Productive Use of Time
- Only Seeks Help when Necessary

Program-Specific Criteria

- Dot appears in center at start
- Dot can be moved in four directions
- Dot cannot be moved off screen
- Colour can be changed (optional)
- Reset works
- Quit works

Teacher Comments

- Level 1 - Limited ability to meet standard and limited effectiveness
- Level 2 - Some ability demonstrated and moderately effective
- Level 3 - Considerable ability demonstrated, considerable clarity or accuracy
- Level 4 - Thorough, high degree of skill demonstrated, insightful, highly accurate

Level