WELCOME TO

# TECHNOVATION

Week 2 - October 1

MICHIGAN STATE UNIVERSITY

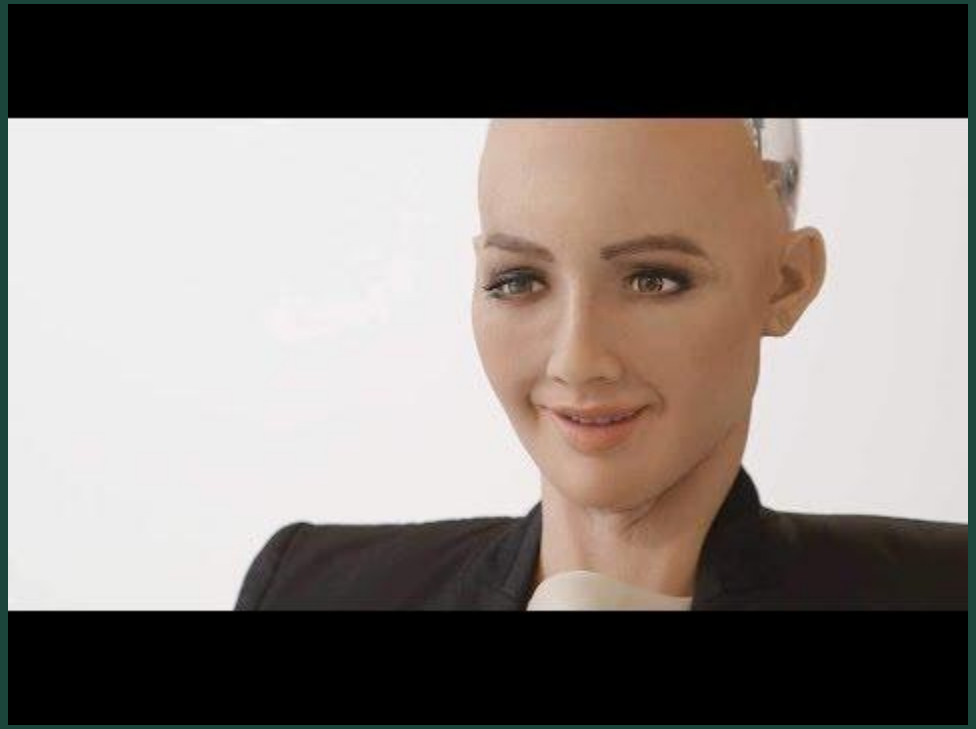
# Agenda

- (10:30) Welcome (Attendance Form)
- (10:40) Icebreaker
- (10:55) Lesson 2:
  - Artistic Effects
  - Variables
  - Input
- (11:30) Coding Challenges
- (11:50) Standup (Temperature check)

# Ice Breaker!

Show and Tell!

# Spotlight



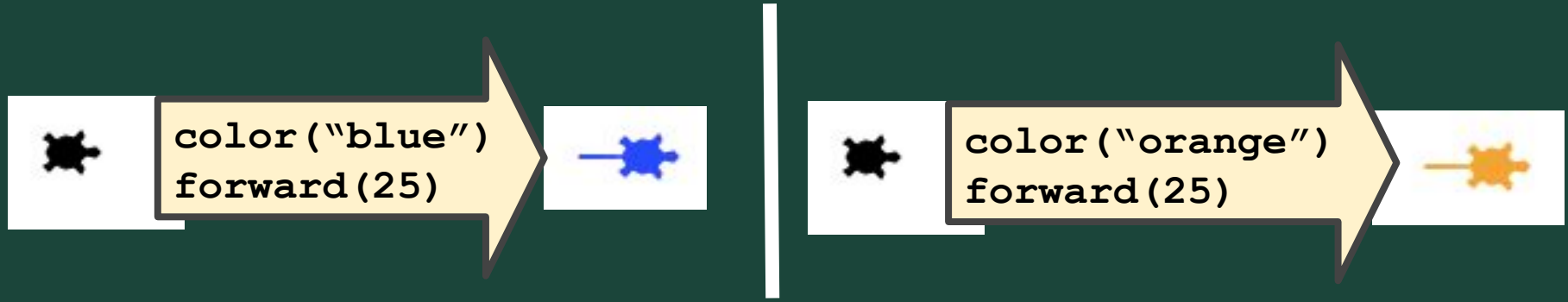
## Artificial Intelligence

- In what ways do you think computer science was used to create Sophia?
- How do you think having a diverse workforce contributed to how Sophia turned out?

# Tracy Command: color

**`color("color_name")`**

Changes the color of
the trail Tracy leaves



# What Color Names are Available?

Here are a few color names you can use:

| | |
|---|---|
| black | orange |
| blue | pink |
| brown | purple |
| cyan | red |
| gold | white |
| gray | violet |
| green | indigo |

# What Color Names are Available?

To get a sense of how many color names are available, here are a few shades of blue you can call:

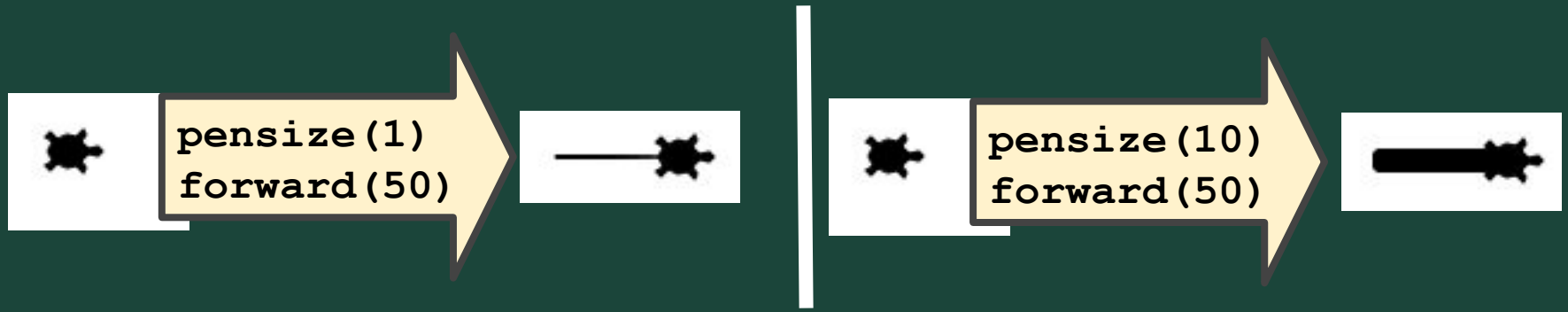
| | | |
|---|---|---|
| `blue` | `midnight blue` | `turquoise` |
| `light blue` | `sky blue` | `cyan` |
| `medium blue` | `royal blue` | `teal` |
| `dark blue` | `cornflower blue` | `aqua` |

If you try to call a color that doesn't exist, Tracy will default the color to black.

# Tracy Command: pensize

**`pensize(`*`number`*`)`**

Changes the thickness
of the trail Tracy leaves



# Tracy Command: begin_fill & end_fill

**`begin_fill()`**

Tells Tracy to fill in any closed shapes that are drawn

**`end_fill()`**

Tells Tracy to stop filling in closed shapes that are drawn

```
begin_fill()
circle(50)
end_fill()
```

# Tracy Command: Advance circle

**`circle(`*`radius`*`,`*`extent`*`,`*`steps`*`)`**

Determines degrees of circle

**`circle(25,360)`**

**`circle(25,180)`**

**`circle(25,90)`**

# Tracy Command: Advance circle cont.

**`circle(`*`radius`*`,`*`extent`*`,`*`steps`*`)`**

Determines number of points in circle

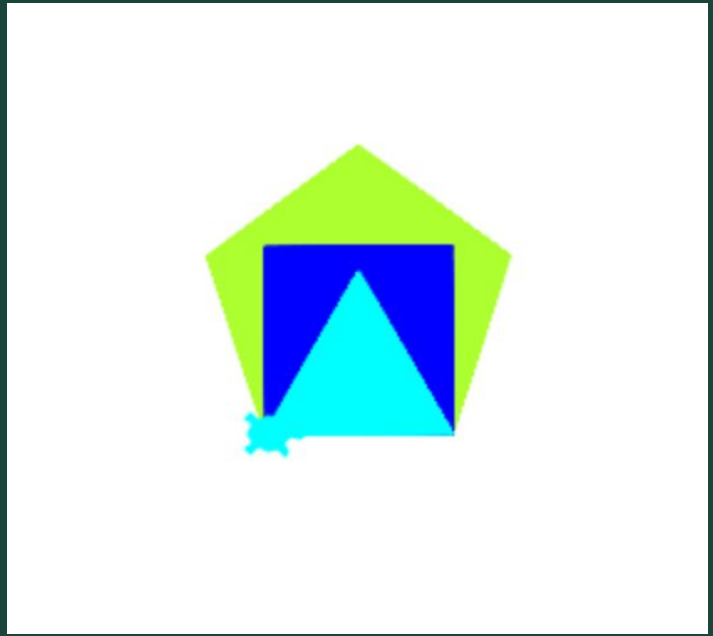
`circle(25,360,3)`

`circle(25,360,5)`

`circle(25,360,50)`

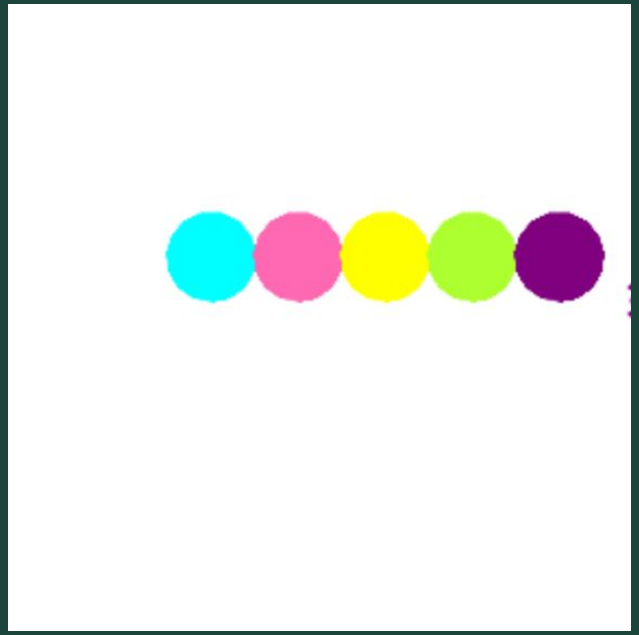
# Example #1: Triangle, Square, Pentagon

Write a program that has Tracy use the advanced circle parameters to draw a circle, square, and triangle filled in with different colors.



# Example #2: Colorful Caterpillar

Using the Caterpillar code from last week, add different colors to the body.

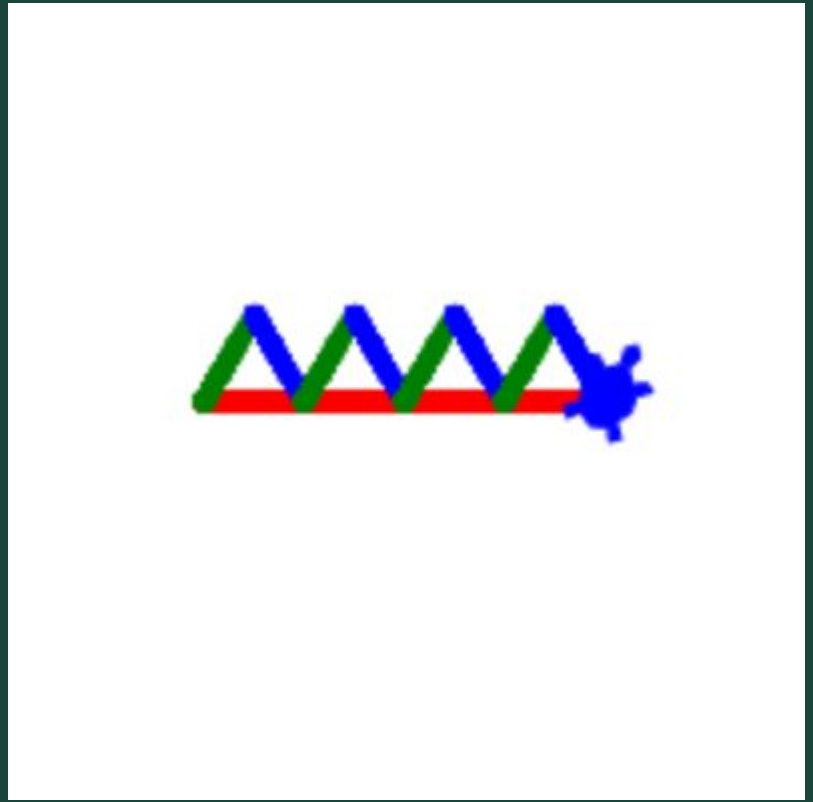


## Example #3: Shaped Toys

Have Tracy draw a set of shaped toys. 2 circles and 1 square in the middle. Feel free to color them how you like!

# Example #4: 4 Colored Triangles

Have Tracy draw for colorfully connected triangles. Use any colors you like!



# Variables

*What's a variable?*

A **variable** is like a "cubby" for a number or string of text!

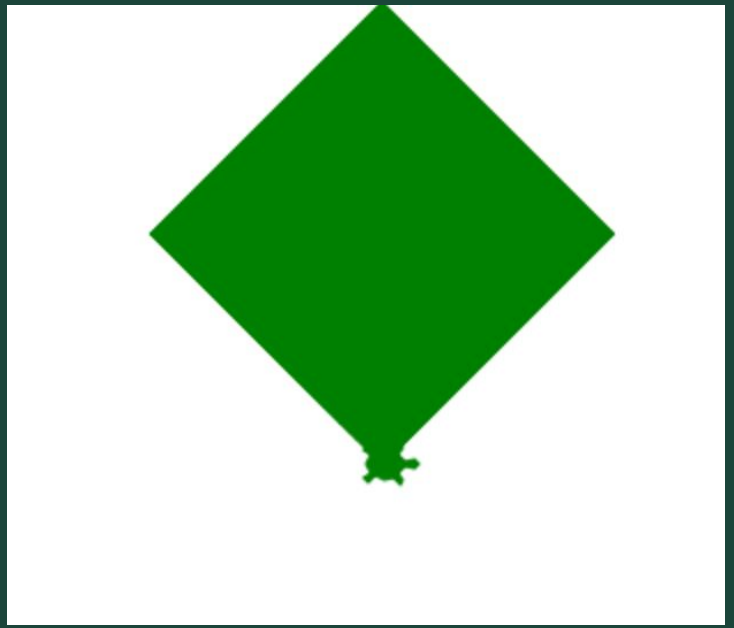

*...so what's the point?*

**Variables** let us set a value *once*, then use that same value over and over!

**Variables** make it easier to modify code!

# Example Using Variables:

```
clr = "green"
length = 100

color(clr)
begin_fill()
circle(length,360,4)
end_fill()
```



# User Input

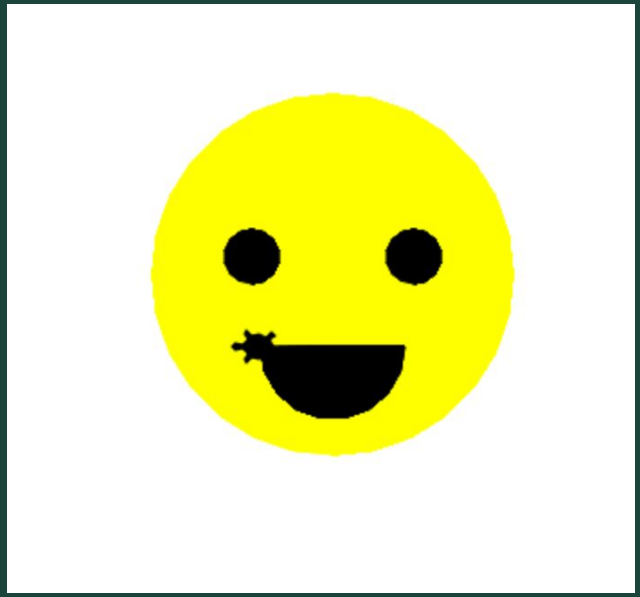
**Variables** also let us save *user input*, so that we can change values on-the-fly while running our programs.

*How does that work?*

We use the **`input("prompt")`** function!

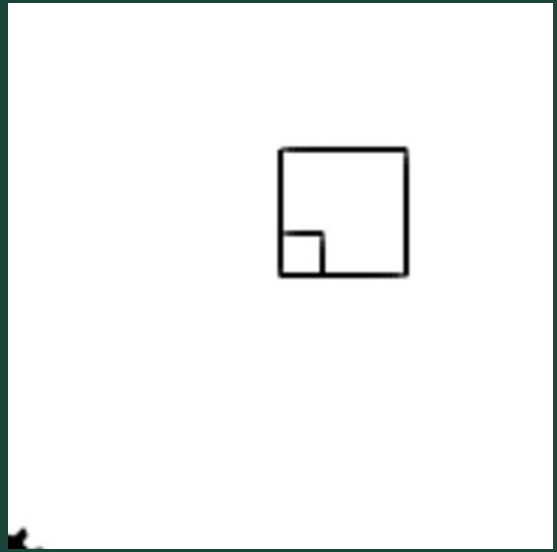

```
clr = input("What color should Tracy be?")

# user types in a color, e.g. "green", and hits enter

color(clr)
```

```
# Draw Face
penup()
setposition(0,-60)
pendown()
begin_fill()
color_of_face = input("What color should my face be?: ")
color(color_of_face)
circle(100)
end_fill()

# Draw Eyes
setposition(45,35)
begin_fill()
color("balck")
circle(15)
end_fill()

setposition(-45,35)
begin_fill()
circle(15)
end_fill()

# Draw Mouth
setposition(-10,10)
backward(30)
begin_fill()
right(90)
circle(40,180)
left(90)
forward(80)
end_fill()
```



# Example #1: Draw Squares with Variables

Draw a square with sides as long as sideLength. Then draw a square with sides a third as long as sideLength.Try to use variables instead of concrete values to have an easier time with this step.

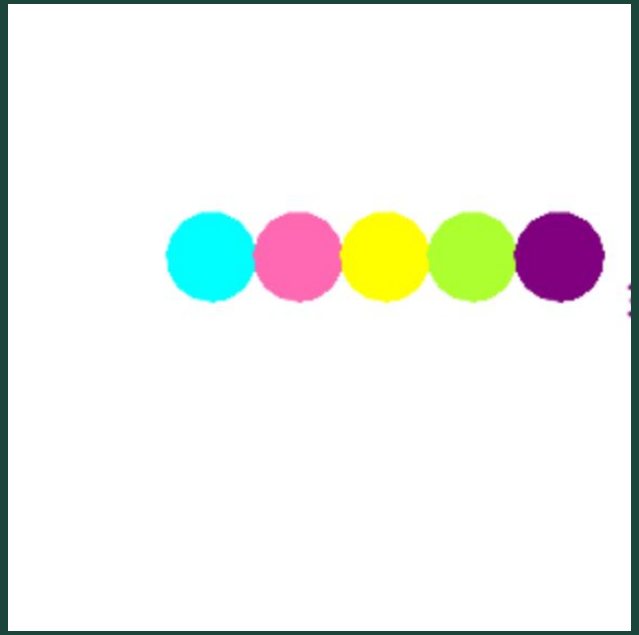


# Example #2: Draw Increasing Circles with Variables

Draw a circle with the value of Radius. Then continue to increase the radius by 25 and draw another circle.

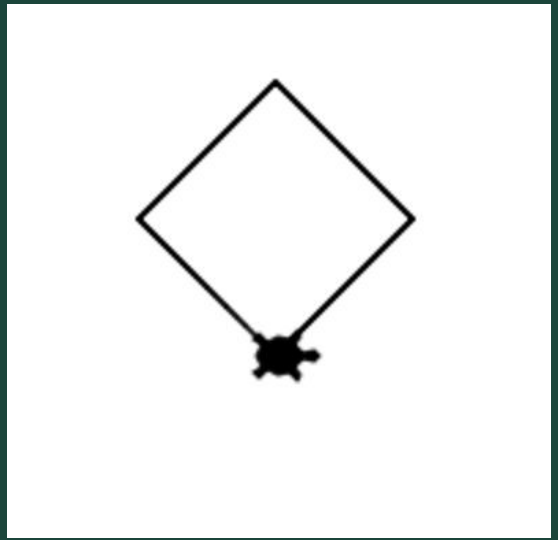
# Example #3: Colorful Caterpillar

Copy your colored caterpillar code then swap the colors of your caterpillar.Feel free to change the variables if you want different colors.



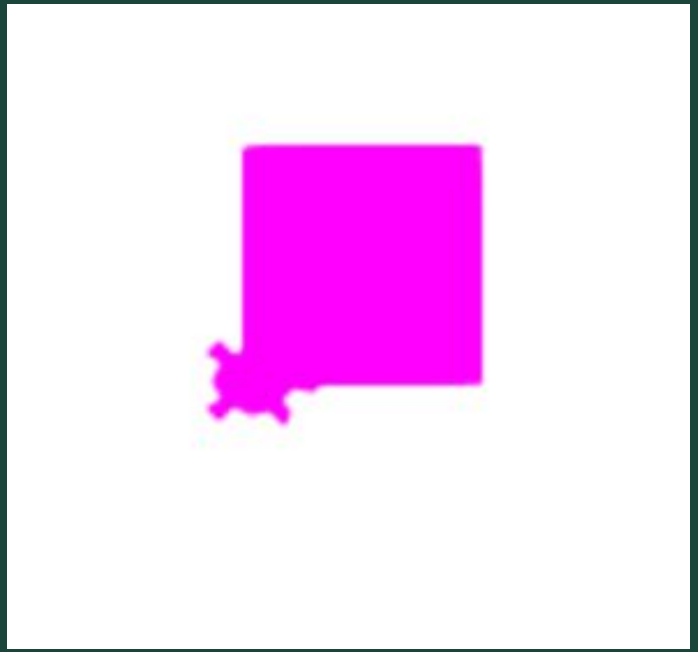
# Example #4: Using User Input to Change a Square

Draw a square at the position of X(your variable #1) and Y(your variable #2) with length sidelength.



# Example #4: Using User Input to Change a Square Colors

Draw a filled in square with side lengths of 100 that is filled with SquareColor. Once you have your square, modify SquareColor to ask the user for a color.



# Ready, Set, Code!

| Command | What does it do? |
| --- | --- |
| `color("color_name")` | Changes Tracy's trail color |
| `pensize(90)` | Changes Tracy's trail thickness |
| `begin_fill()` | Starts filling in drawn shapes |
| `end_fill()` | Stops filling in drawn shapes |
| `circle(radius, extent,steps)` | Can control the radius, degree, and number of points of a circle |
| `input("Request")` | Asks the user for information |
| `setposition(x,y)` | Moves Tracy to a specific location |

# Standup

- What is a challenge you faced today?
- What is something you were successful with?
- What do you want to improve on for next week?
- What are you most excited to learn?

# Attendance and Temperature Check

Attendance

Temperature Check