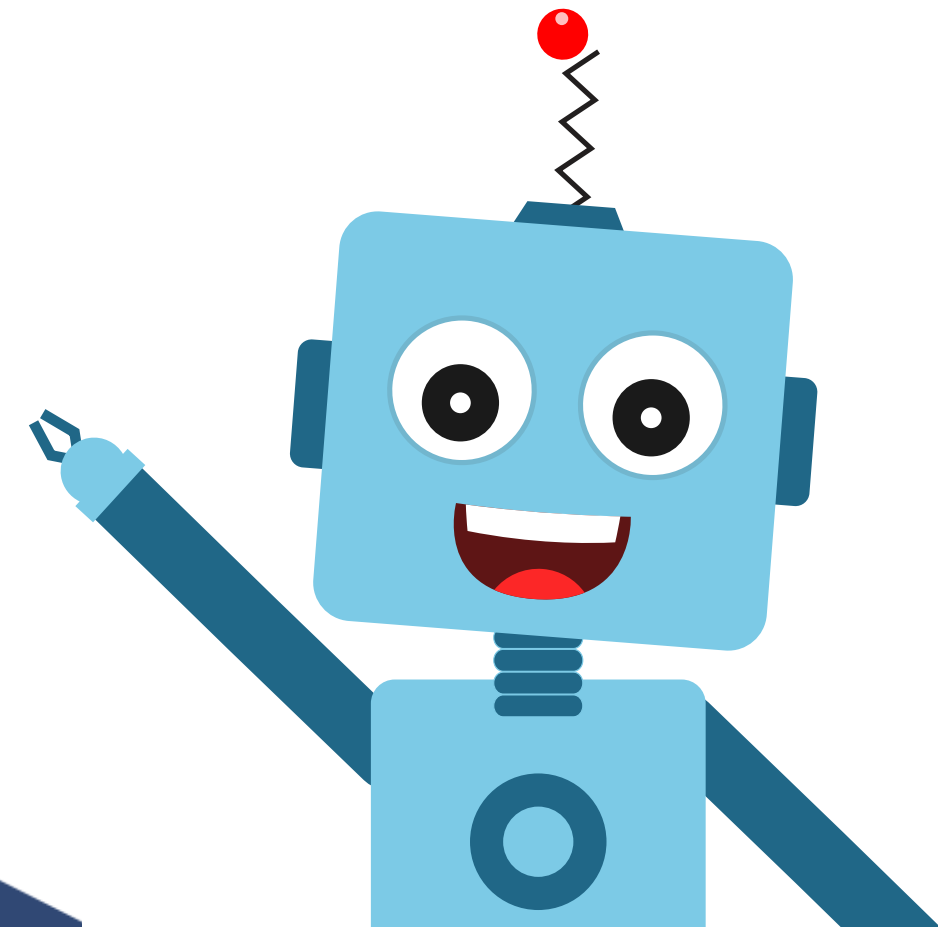# Waste Management System – Part 2

Session 20

Topics covered

- Introduction to waste management system 2

- Advantages of waste management

- Activity: Detecting the waste

Biodegradable Waste

Waste Management system

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1. Biodegradable objects are those that can be broken down by natural biological processes, such as the action of bacteria or other microorganisms, into simpler, non-toxic substances that can be safely absorbed into the environment. Examples of biodegradable materials include food waste, plant-based materials, and certain types of plastics made from organic compounds like cornstarch or sugarcane.

2. On the other hand, non-biodegradable objects are those that cannot be broken down by natural biological processes and can persist in the environment for a very long time, often causing harm to wildlife and ecosystems. Examples of non-biodegradable materials include certain types of plastics made from synthetic materials like polyethylene, polystyrene, and PVC, as well as metals, glass, and many chemicals.

Here are some tips for identifying whether an object is biodegradable or non-biodegradable:

*   **Look for labeling**: Many products will have labeling indicating whether they are biodegradable or not. However, be aware that some products may use misleading or vague language, so it's important to read labels carefully and do your research.

*   **Check the material**: Certain materials, like paper, cardboard, and untreated wood, are generally biodegradable. In contrast, materials like plastic, metal, and glass are non biodegradable.

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- **Consider the composition**: Some materials may be partially biodegradable, meaning that only certain parts of the material will break down. For example, some plastics may be made from a mix of biodegradable and non-biodegradable components.

- **Observe the behavior**: If you are unsure whether an object is biodegradable or not, you can try observing its behavior when exposed to natural conditions. For example, you can bury a small sample of the material in soil and see if it breaks down over time.

- Remember that even biodegradable materials can have negative impacts on the environment if they are not disposed of properly. So it's important to follow proper waste management practices, including recycling and composting, to minimize the amount of waste that ends up in landfills or the natural environment.

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- Open PictoBlox and create a new file from the menu-bar & select the coding environment as Python Coding.

- Add the Object Detection extension.

- Create an object obj of class Object Detection; this gives access to all its functions.

- Create two lists**: "bio"** and **"non_bio**, and add banana, apple, book, and pizza as bio elements and bootle, pen, scissors, clock as non_bio elements.

- Turn on the camera using the function obj.video("on").

- Start the **while loop with True.**

- Now to acquire the data, invoke the method obj.analysecamera() using the obj object.

- Now we will use the conditional statements to check if the number of objects is greater than 0.

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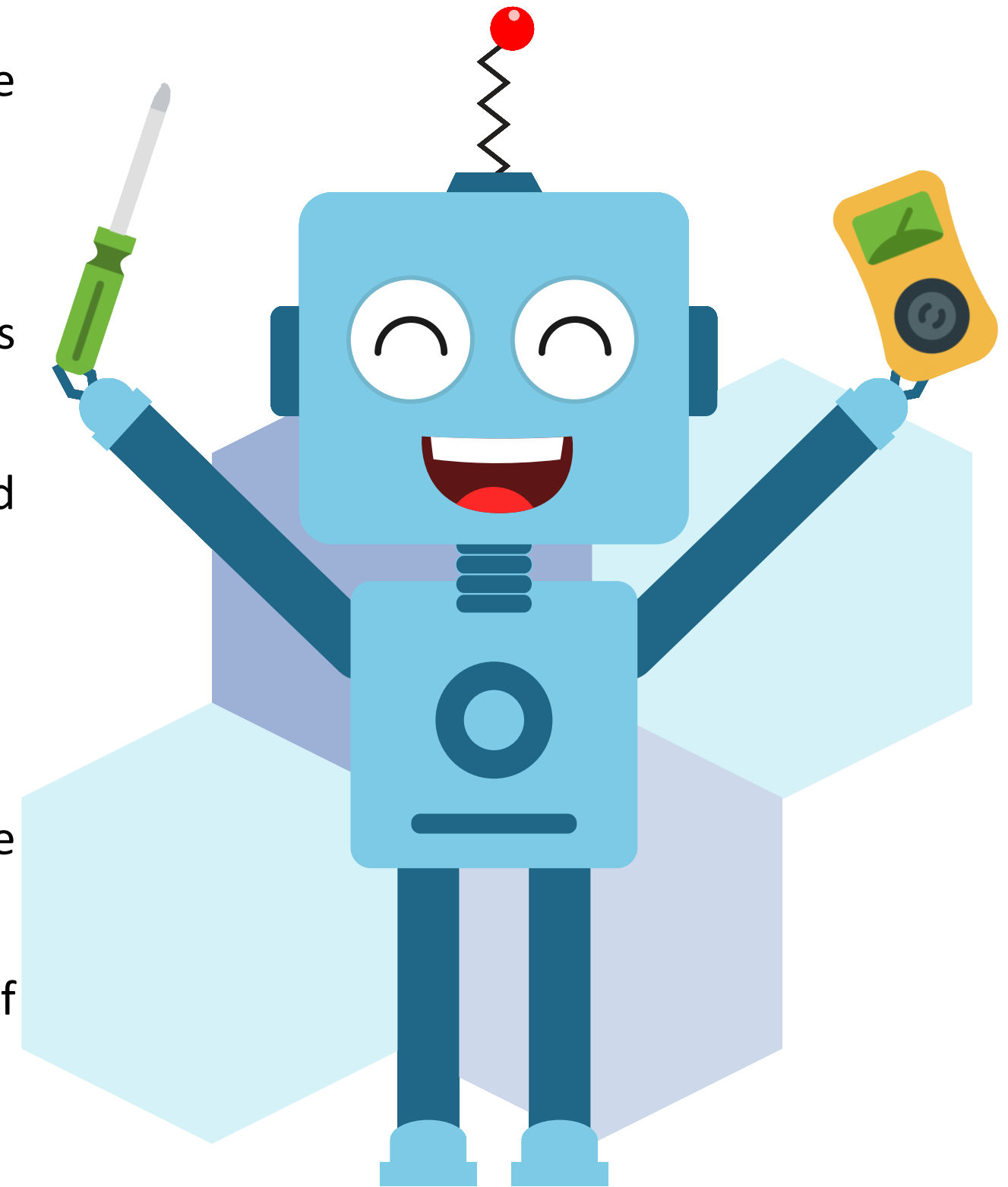
- Using conditional statements check if the object name (Using **obj.classname()**) is in the bio list. If yes, the sprite will say **Bio Degradable Waste**.

- With elif check for non_bio list.

- In the else, make the sprite say **"Unidentified Waste"**.

- Press the **"Run"** button to test the code.

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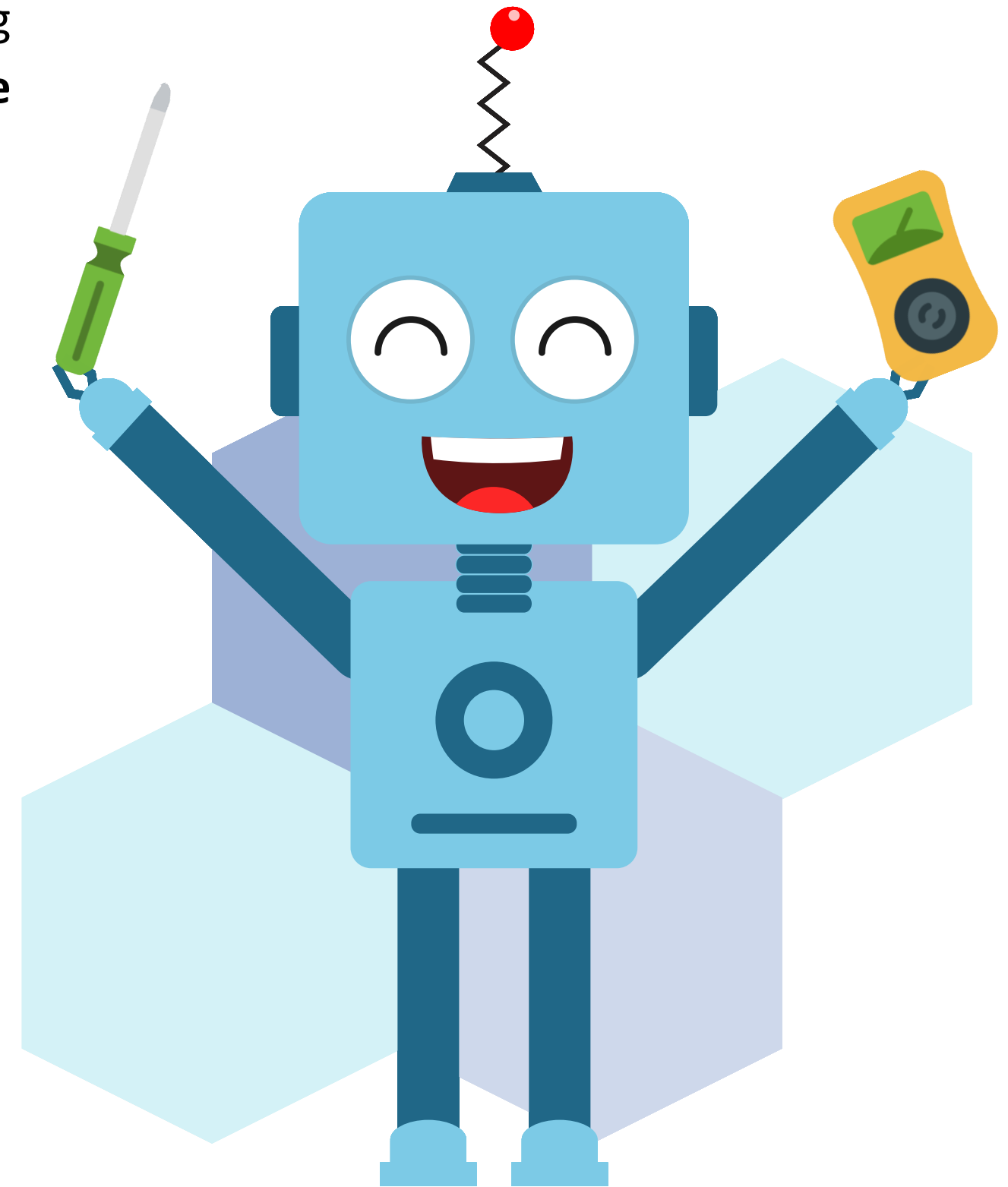
```python
sprite = Sprite('Tobi')
obj = ObjectDetection()
bio = ['banana', 'apple', 'book', 'pizza']
non_bio = ['bottle', 'pen', 'scissors', 'clock']
obj.video("on")
while True:
  obj.analysecamera()

  if obj.count() > 0:
    if obj.classname() in bio:
      sprite.say("Bio Degradable waste")
    elif obj.classname() in non_bio:
      sprite.say("Non Bio Degradable waste")
    else:
      sprite.say("Unidentified Waste")
```

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WASTE BASED ALARM SYSTEM

1. Continue with the previous code. Add the object declaration for Quarky in the code in the start using **quarky =Quarky().**

2. Within the if statement for bio waste, incorporate the command **quarky.drawpattern("c"*35)** to cause the LED to illuminate green(Quarky will have a blue Green Led).

3. Within the if statement for non_bio waste, incorporate the command **quarky.drawpattern("f"*35)** to cause the LED to illuminate blue(Quarky will have a Blue Led).

4. If object will not detected then incorporate the command **quarky.drawpattern("a"*35)** to cause the LED to illuminate Red(Quarky will have a Red Led).
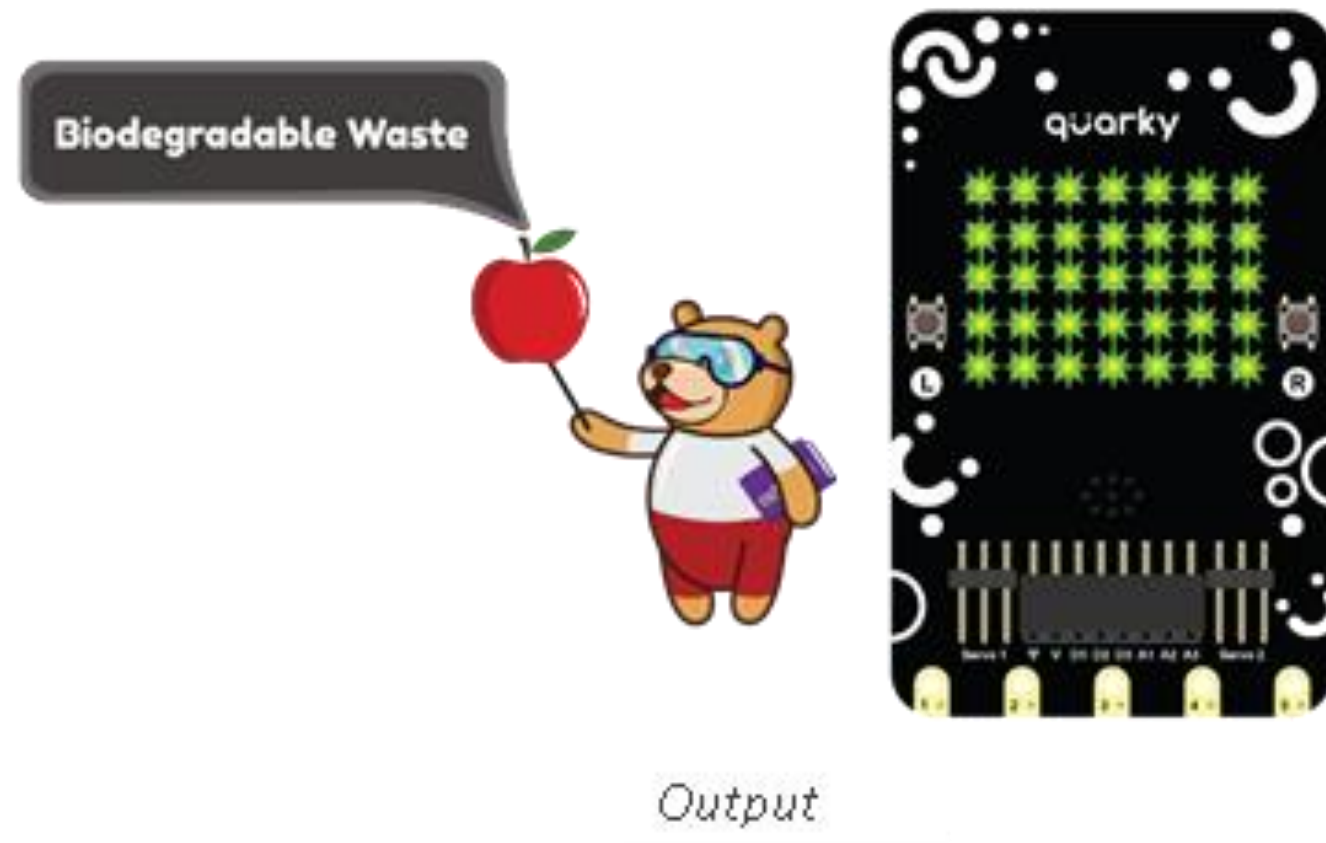
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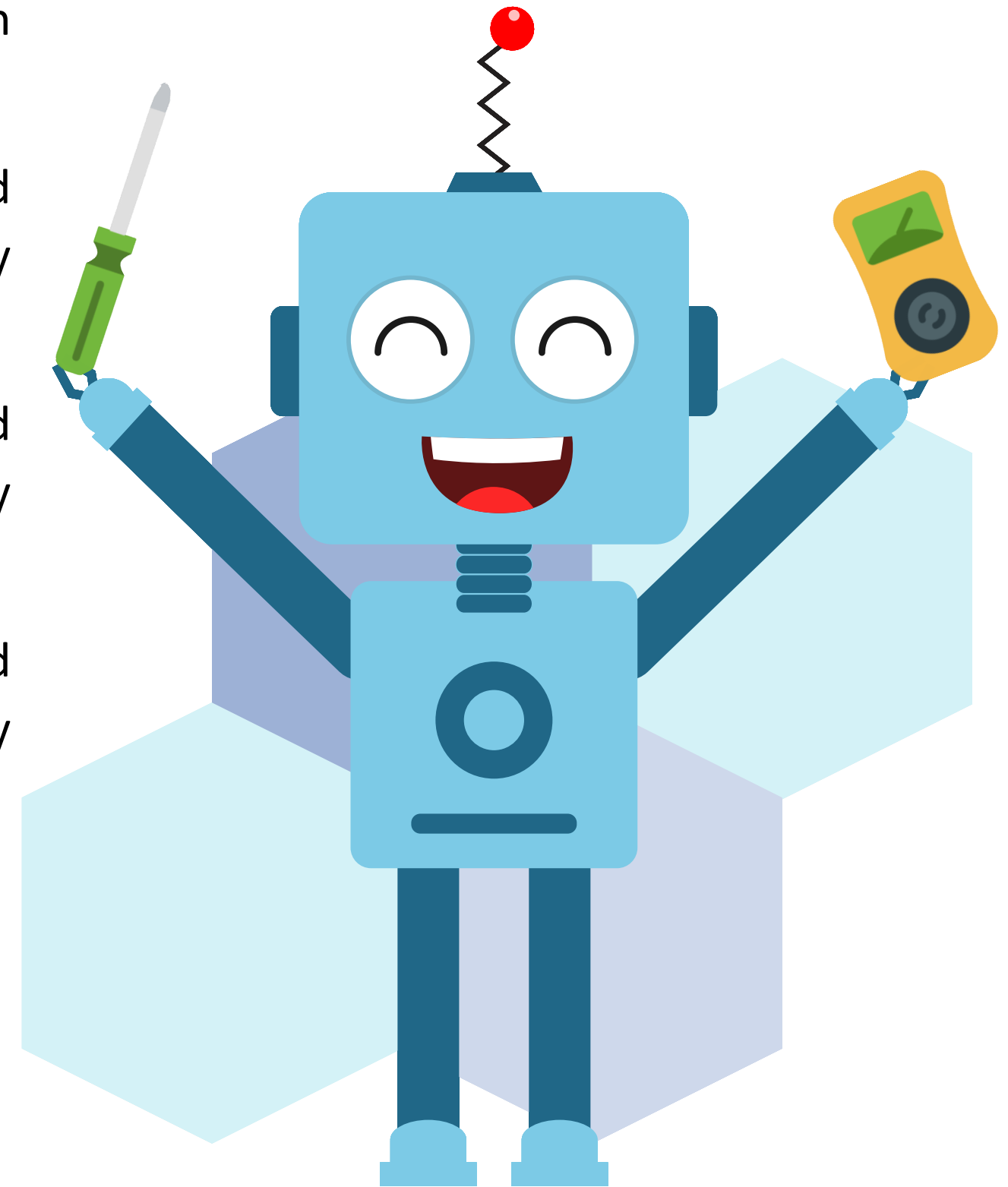
```
sprite = Sprite('Tobi')
quarky =Quarky()
obj = ObjectDetection()
bio = ['banana', 'apple', 'book', 'pizza']
non_bio = ['bottle', 'pen', 'scissors', 'clock']
obj.video("on")
while True:
  obj.analysecamera()

  if obj.count() > 0:
    if obj.classname() in bio:
      quarky.drawpattern("c"*35)

    elif obj.classname() in non_bio:
      quarky.drawpattern("f"*35)

    else:
      quarky.drawpattern("a"*35)
```
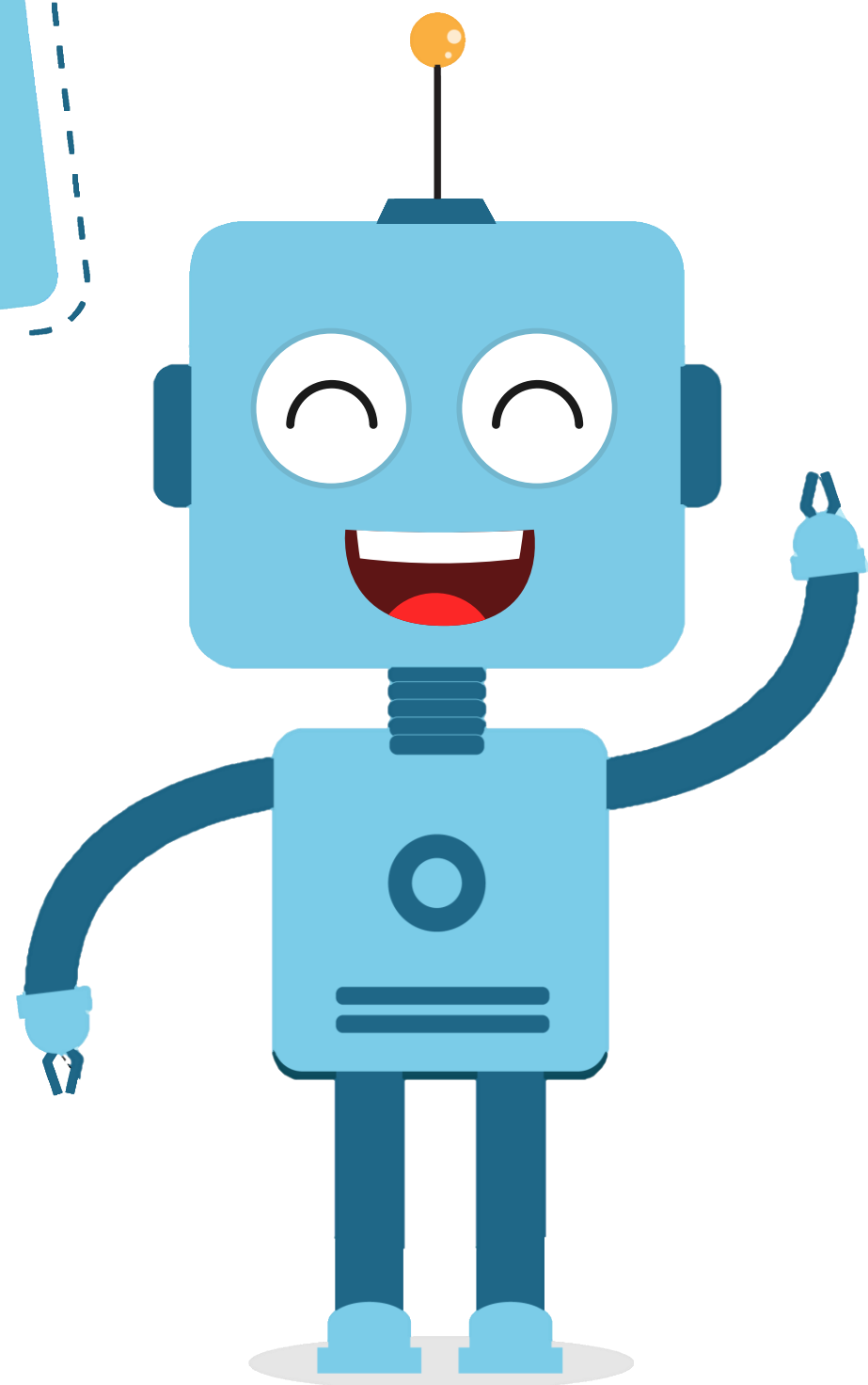
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Output

SAVE THE PROGRAM

Save the project file as **Waste Based Alarm System**.

THANK YOU

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