Maji Ndogo Agricultural Innovation Project 2

Introduction

This document provides an overview of the project, its goals, and the technologies used.

Overview of Project

The aim of the project is to revolutionize agriculture in Maji Ndogo through the use of automation technology to optimize agricultural processes, improve efficiency, and increase crop yields.

Project Goal

The goal of the project is to automate more complex movement of our farm equipment using functions to make our code more modular, simpler to read, modify, and extend.

Key Features of Project

- Generating a list of coordinates for a tractor to plough entire field
- Reversing the coordinates to turn the tractor around at the end of each row.

Tools Used

- Python
- Pygame, logging, and random packages
- Jupyter notebooks/VS code/Google Collab

NB: The Code_challenge_loops_logic_functions_notebook file contains code instructions to install the pygame packages and codes to set up and test the visuals of our digital field.

What I did

1. To simulate plouging an entire field I used nested for loops in a function to generate a list of coordinates in tuple format based on a given field size. The coordinates represent the series of movements our digital tractor should make. (Run the simulation code to visually see how the tractor moves in a game).

2. Reversing the tractor to simulate the realistic movements of farm equipment involved:

    a. Creating a function to reverse a list of numbers

b. Creating a function that uses nested loops to generate a list of row and column coordinates for our field and uses if-else logic to determine on which rows to reverse the coordinates (using the function created to reverse list above) to simulate the tractor turning around.

NB: The Tractor should plough from left to right on odd-numbered rows and right to left on even-numbered rows.

Conclusion

This project represents a significant step forward in modernizing agriculture through technology in Maji Ndogo. By simulating the real life movements of any farm machinery on our digital farm.