e-Yantra Robotics Competition (eYRC-2017)
Task 1B - Planter Bot

Objective:

- Perform basic Video Processing tasks like streaming a video and splitting the video into frames or individual images for further processing.

- Recognize objects of different colors by applying color space and image thresholding techniques for a video input.

- Overlay an image on a detected color object (a unique image per primary color - **Red, Green and Blue**).

Structure of Task Directories:

Please find the following folders within the folder that contains this *Read Me Task1B* file. The folders have been numbered:

1. **Resources:** You will find *Reading_Material.pdf* file in this folder. This file contains links to relevant tutorials and practice exercises for you by e-Yantra. These tutorials and exercises will help you build a base for performing the tasks as you go along. If you wish to get further knowledge of the open source library "OpenCV" and the programming capabilities of Python, links are provided from the official OpenCV documentation site in addition to e-Yantra Resources material. You are required to first go through the resources and exercises provided in this file before you attempt the Task1B.

2. **Task_Description:** In this folder, you will find -
- *Task1B_Description.pdf* which contains the task assignment and problem description for the Task1B.
- "Video": is a subfolder which contains a video on which you will test your code and return results as your submission material. It also contains a basic code snippet in a Python script file named Task-1B_main.py. You can modify only specific sections of these code files.
  IMPORTANT: The sections marked "**DO NOT EDIT!!!**" are **strictly not** to be modified.
  There is a subfolder within this folder named "Overlay_Images", which contains the flower images for practising the overlay mechanism on detected objects.
- "Sample Shapes": is another subfolder which contains six sample shape images. The shapes are: **Triangle, Rhombus, Trapezium, Pentagon, Hexagon and Circle** with respective names in **.png** format. You can use these shapes as templates to create your own sample frames and subsequently a video from these frames, to test your code **for practice**, in addition to the video provided by e-Yantra team in the "Video" folder. You are permitted to change the color of the shapes in your own sample frames; provided you adhere to any combination of one of the three primary colors viz. **Red, Green and Blue**.

Submission Instructions:

Teams have to upload their solutions as instructed below:

- Please save the modified Python script file named Task-1B_main.py along with the output video and csv in a folder named Task_1B.
- Further submission instructions are given in *Read Me* file in Task 1 folder.
- Refer *Submission Directory Structure & Flow.jpg* in folder Task 1 for submission directory structure and flow.

Warning:

- **IMPORTANT**: The document you submit should be YOUR work in YOUR WORDS. To avoid any copyright violations, you must NOT copy phrases directly from manuals or web.

- The team should NOT mail or upload the document anywhere else, except on the portal.

- Teams failing to submit the document by the deadline will lose the marks for this task.

- e-Yantra WILL NOT entertain any request for extension of deadline for uploading the task.

- e-Yantra holds complete discretion to disqualify a team if any foul play is suspected.