User Guide

AUTONOMOUS FLIGHT

FOR

DRONES ON SIMULATION

May 2018

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1 Introduction

1.1 Scope and Purpose

The purpose of this product is to autonomously fly the drone according to the coordinates entered by the user. During the flight, the drone will calculate the shortest route to the destination and will determine a new route to overcome the obstacle if there is any obstruction. Simulation will do that according to coordinates identified by user, drone will autonomous flight from the starting point to destination point and during this flight when the drone encounter the obstacle, it will aim to determine itself a new path and reach the destination point.

2 How It Works?

2.1 MATLAB Installation and Compiler

To run the simulation program first of all you should install at least 2017 version of Matlab on your computer. You can enter MATLAB by double-clicking on the MATLAB shortcut icon (MATLAB 7.0.4) on your Windows desktop. When you start MATLAB, a special window called the MATLAB desktop appears. The desktop is a window that contains other windows. The major tools within or accessible from the desktop are

- The Command Window
- The Command History
- The Workspace
- The Current Directory
- The Help Browser
- Run and Time button

This page include create a new script before start to write codes and run it.

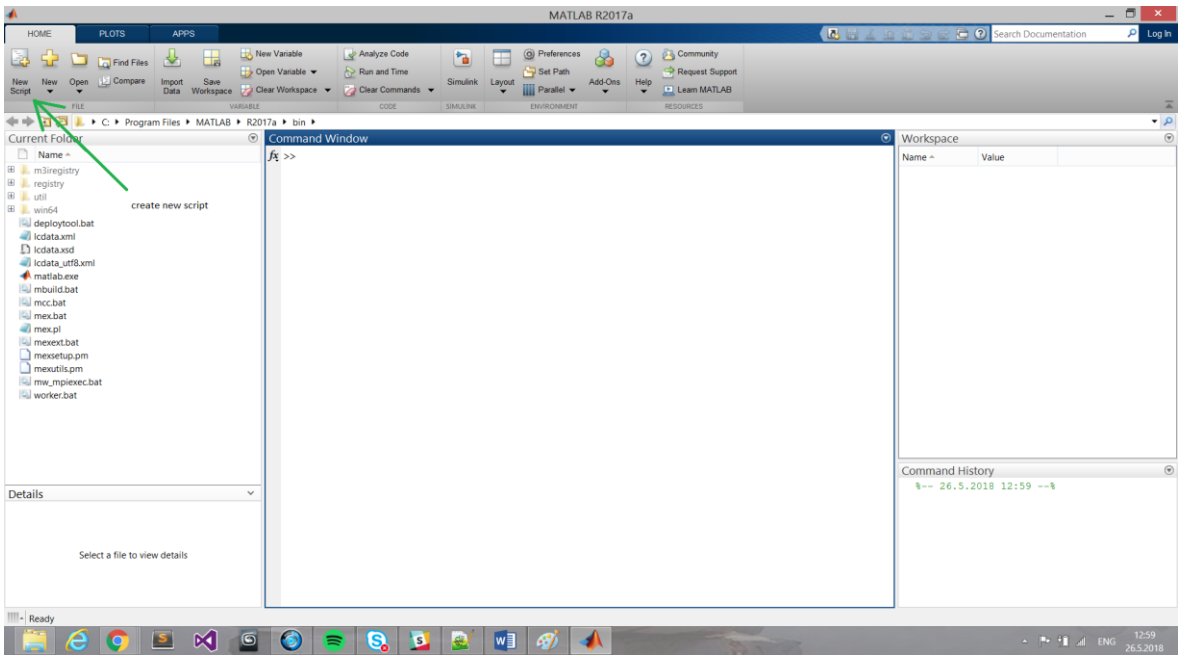

Figure 1.1: The graphical interface of MATLAB to create new script

After create a new script, you will see this page on your screen and this page will help to show where codes are written and how it run.

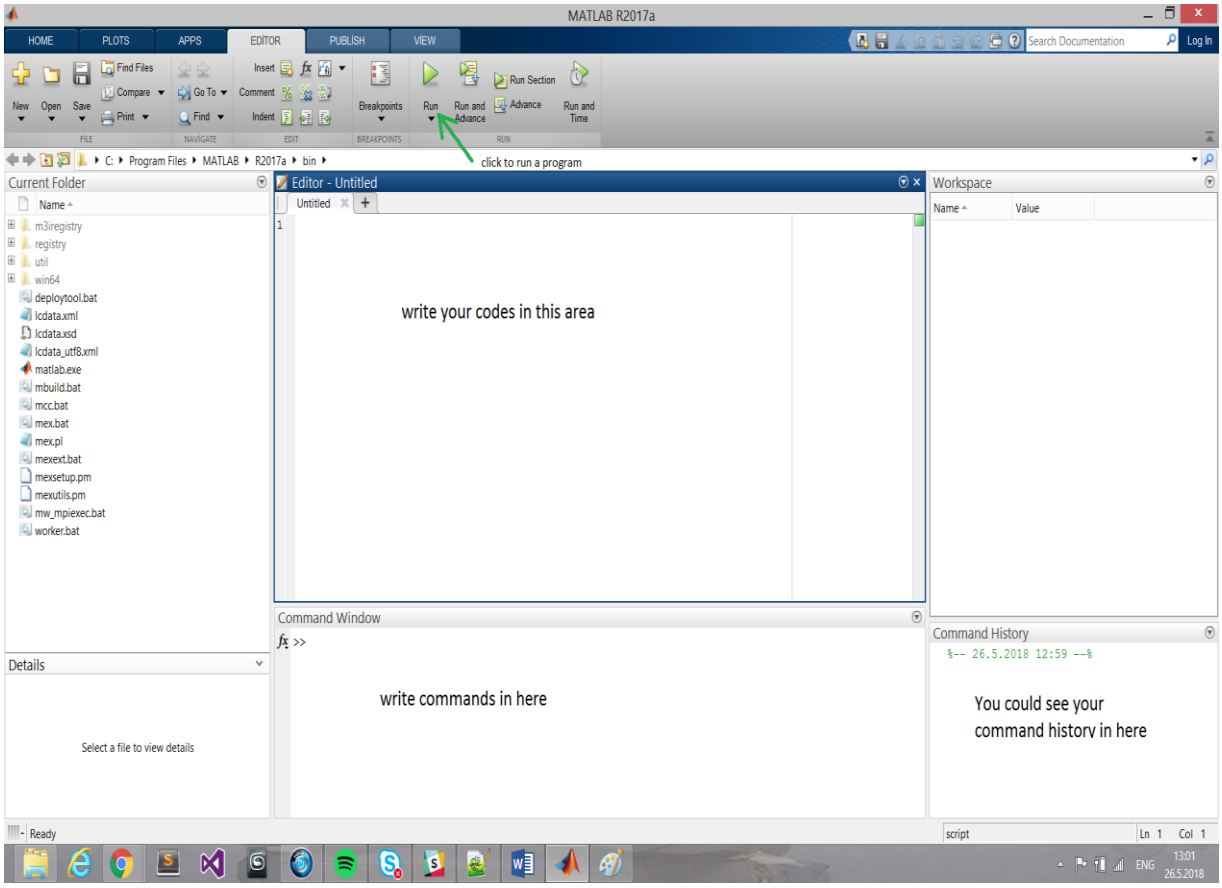

Figure 1.2: The graphical interface to the MATLAB workspace

2.2 How to Access Codes

You can reach codes in this website (https://github.com/CankayaUniversity/ceng-407-408-project-autonomous-flight-for-drones/blob/master/BitirmeProjesi.m).

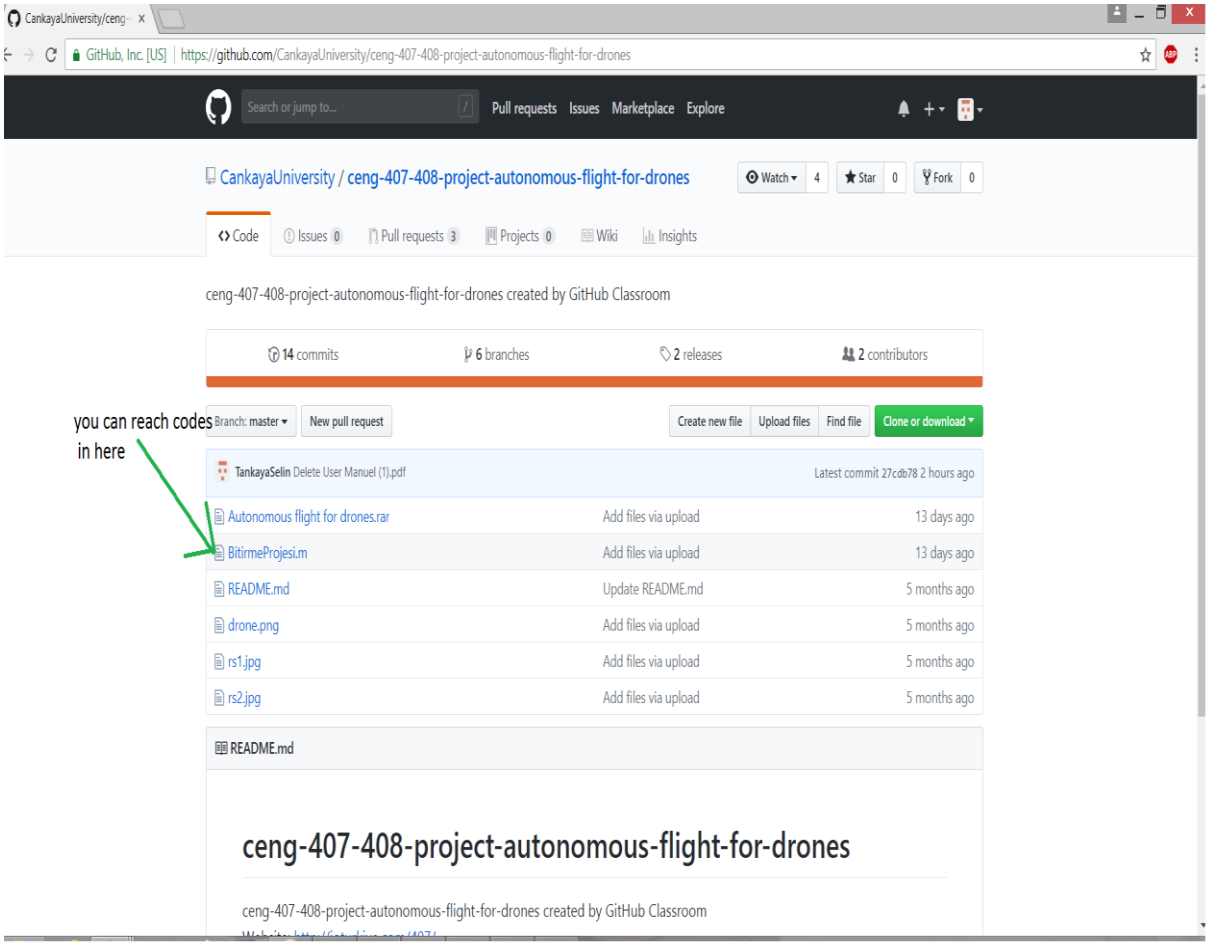

Figure 1.3: The graphical interface shows how to reach codes

After open “BitirmeProjesi.m” file, you will see codes on the screen and you can copy all codes from here.

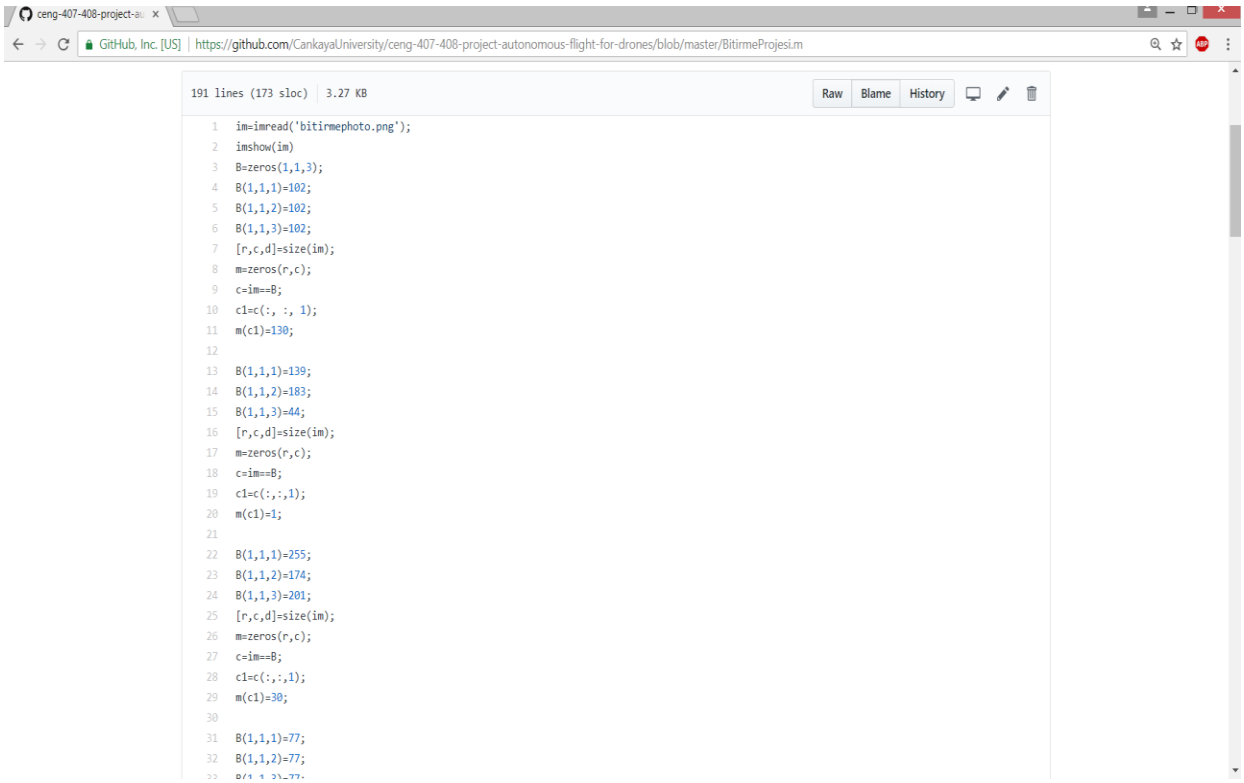

Figure 1.4: The graphical interface include codes on the website

2.3 Start Simulation

This page shows that how to start simulation after write the codes.

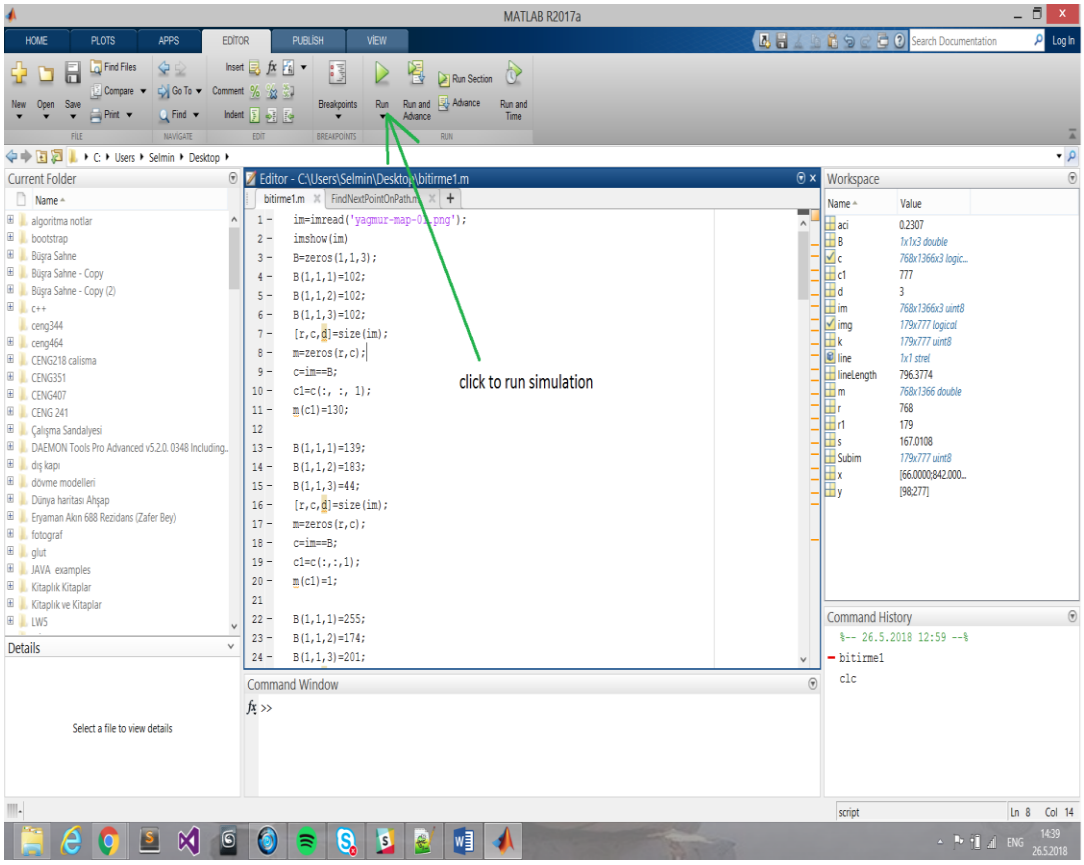

Figure 1.5: The graphical interface shows to run program

You will see map on your screen after click “Run” button and To determine a coordinate on the map, you should use mouse and click a somewhere on you want to determine starting point and ending point.

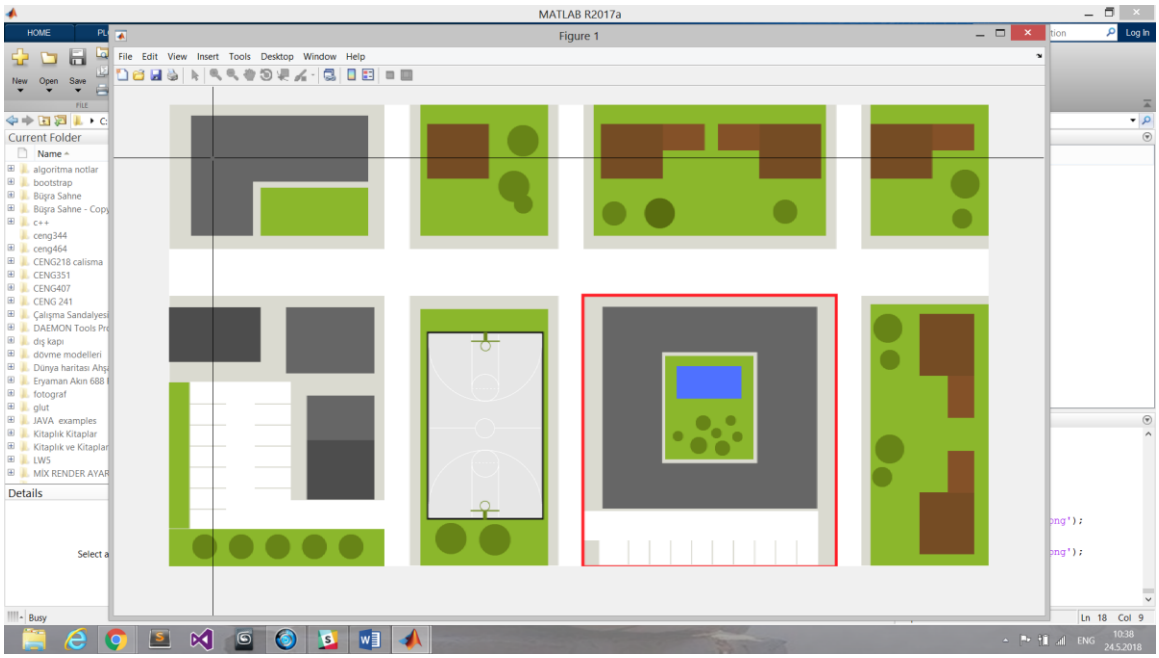

Figure 1.6: The graphical interface of map

The simulation will start automatically after all these operations. And the drone will begin to move from the starting point to the ending point.

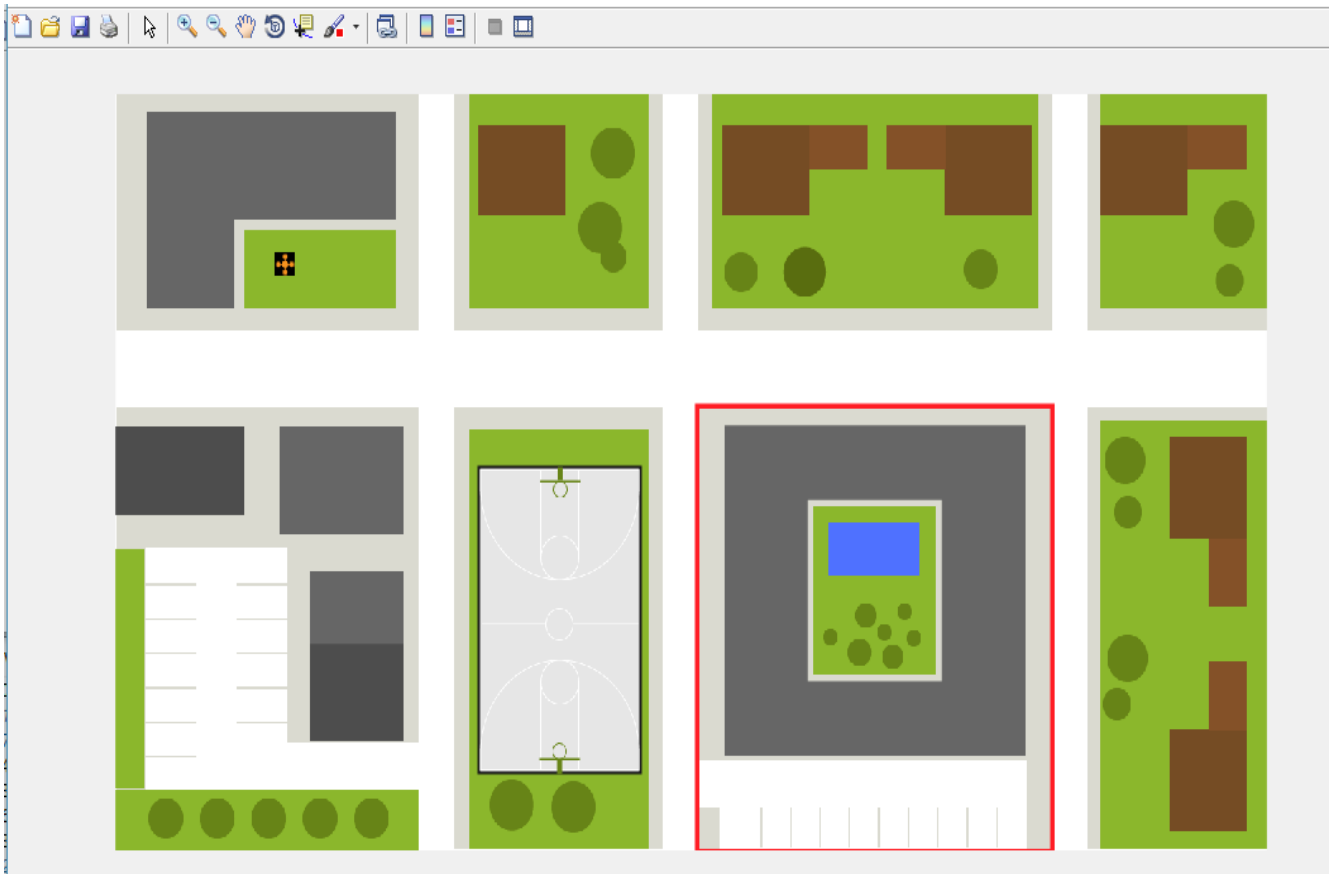

Figure 1.7: The graphical interface of simulation