

Assignment 0 : Writing Kachua programs

1 Introduction

The aim of this assignment is to get interact with our new tool called KACHUA based on the Kachua programming language. It is designed to help students to implement program analysis and verification concepts easily.

1.1 Kachua language Description

The language supports the following types of statements,

- Assignment statement,
- If-else statement, ‘
- Repeat statement: similiar to for loop.
- Move statement: movement of Kachua on Canvas like *forward*, *backward*, *left*, *right*.
- Pen statement: whether to draw on Canvas or not when moving in canvas like penup and pendown

Note: Please refer to the README.md (provided in the Kachua.zip) to install required dependencies. It also contains instructions on how to execute a program.

2 Objective

Write Kachua programs for the tasks given below:

- **Task 1:** A Kachua is given a task to draw a certain pattern on the Canvas. Initially, draw a line on Canvas by moving forward with 100 steps and turn *right* by 45 *degrees*. Now from the current location, move in a square pattern so that at every *even* movement Kachua is not allowed to draw on Canvas. The length of the movement in the square pattern is also 100 steps.

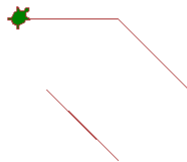


Figure 1: Expected output of Task 1

- **Task 2:** A turtle program takes four arguments i.e, x , y , m , and d , where (x,y) , m and d denote the Canvas locations, movement, and direction, respectively. Write a program where Kachua needs to move a location pointed by (x,y) without drawing into Canvas. If the movement m is less than 100 steps, then turn *left*; else, turn *right* by the specified direction d .

3 Deliverables

- The source code of your implementation.
- Output of both tasks.

4 Submission Format

- The submission should be a zip file.
- The zip file should be named as assignment_”number”_”Roll-of-student”.
Eg. assignment_0_211225.zip
- The zip file should contain
 - a directory named source which will contain the source code,
 - a directory named outputs which will contain the outputs of both tasks.

Note: Please note that your submission may **NOT** be graded if you do not follow the format.