SRC Instructor guide

SRC assignment name:

Why plant trees?

Course level (CS0, CS1, CS2):

Part A: CS0
Part B: CS1

Programming language

Part A: Python
Part B: Java
    Although other languages can be used for both parts.

Domain/context

The importance of tree planting and become familiar with wildfire problem in California

Societal factor

The idea is to make students understand social responsibility and some problems that can affect the whole community. Planting trees helps restore forest cover, ensuring that our forests can continue to provide wildlife habitat, supply water to millions of Americans, and help fight climate change.

Prerequisite knowledge

The topic consists of two programming assignments:

- Part A: variables, expressions, conditionals, reading input

- Part B: classes, objects, arrays, compound data, Read and Print Data from CSV files

Any critical components

The topic consists of two programming assignments:

- The type of trees can be changed according to the instructor.

- The instructor can add other important factors to plant trees.

Abstract (include a brief introduction and context):

Part A: Every year, more and more of our forests are affected by natural disturbances that cause deforestation. Wildfire, insects and disease - exacerbated by climate change - are jeopardizing the future of our forests. Planting trees helps restore forest cover, ensuring that our forests can continue to provide wildlife habitat, supply water to millions of Americans, and help fight climate change.
    Part B: A wildfire is an unplanned, uncontrolled and unpredictable fire in an area of combustible vegetation starting in rural and urban areas. California has dry, windy, and often hot weather conditions from Spring through late Fall that can produce moderate to severe wildfires. Wildfires in California are growing more dangerous because

of the accumulation of wood fuel in forests, higher population and greater electricity transmission and distribution lines. At times, these wildfires are fanned or made worse by strong, dry winds, known as Diablo winds when they occur in the Northern part of the state and Santa Ana winds when they occur in the South.

The main goal of this programming assignment is to focus on the importance of trees on our planet.

Students will learn and discuss :

- why planting trees matters

- what type of trees are compatible with conditions of several areas

- how to implement a system to read data about wildfires

Lesson Plan

Part A: CS0

- After teaching about conditionals and how to read the input the assignment can be discussed. (It should be sometimes around the midterm exam (week8))

- Allocate one week for students to complete.

Part B: CS1

- After teaching about creating several classes, working with objects, learning about arrays, and how to read from csv files the assignment can be discussed. It should be sometime after the midterm exam (week9))

- Allocate 10 days for students to complete.

Teaching strategies

- Before explaining the programming requirement parts, the instructor is encouraged to have a short in-class discussion with students.

- Try to engage students in the discussion.

- The instructor can encourage students to demonstrate the program to their family or friends