14BHD INFORMATICA, A.Y. 2023/2024

Laboratory Exercise 1

Objectives of the exercise

- Practice flowcharts and pseudocode
- Familiarize yourself with the development environment
- Familiarize yourself with the Python language

Technical content

- Flowcharts
- Use of various programming tools
- Creating and running Python scripts
- Terminal prints

NOTE: The numbers in square brackets following each exercise refer to the exercises proposed in the textbook. Sometimes the wording of the exercises has been modified to make it clearer and/or to adapt it to the objectives of the course.

Ex 1. In an event scheduling program, it must be checked if two appointments of the same day overlap. For simplicity, let's assume that appointments always start at an exact time (without minutes) and use military time (that is, with hours ranging from 0 to 23). The following pseudocode describes an algorithm that determines whether the appointment that starts at start1 and ends at end1 overlaps the appointment that starts at start2 and ends at end2.

```
If start1 > start2
        s = start1
Otherwise
        s = start2
If end1 < end2
        e = end1
Otherwise
        e = end2
If s < e
        Warn the user: Appointments overlap
Otherwise
        Appointments do not overlap
```

Draw the flowchart for the algorithm. Implement the algorithm in Python and run it (define start1, start2, end1, and end2 in the beginning of the program).

Ex 2. The following algorithm finds the season (Spring, Summer, Fall, or Winter, that is, respectively, spring, summer, autumn, or winter) to which a date belongs, provided as month and day.

If month is 1, 2 or 3, then season = "Winter"
if month is 4, 5 or 6, then season = "Spring"
if month is 7, 8 or 9, then season = "Summer"
if month is 10, 11 or 12, then season = "Fall"
If month is divisible by 3 and day >= 21 then
    If season is "Winter", then season = "Spring"
    Otherwise if season is "Spring", then season = "Summer"
    Otherwise if season is "Summer", then season = "Fall"
    Otherwise season = "Winter"

Draw the flowchart for the algorithm. Implement the algorithm in Python and run it (define month and day in the beginning of the program, test with multiple values).