CSE 465/565
Spring 2023
Homework #3
100 points

Instructions: Submit to Canvas a single zip file that contains your programs. Your zip file must have the following directory structure, where uniqueID is your Miami University uniqueID:

uniqueIDHW3	*; top-level directory containing all of your code*
ex1.txt	*; your ASP code for **exercise 1** below*
ex2.txt	*; your ASP code for **exercise 2** below*

(1). (50 points) Complete the starter code in file *ex1.txt* to automate the solution of the logic puzzle below, using the generate-and-test methodology.

A 20-year reunion took place at Applebury High School this evening, and votes were taken on who would be crowned "King of the Reunion." Using only the clues below, match each contestant to the sport he played in high school, and the number of votes he received.

Clues:
1. *Tommy played hockey.*
2. *The hockey player received 14 votes more votes than Sergio.*
3. *Isaac is either the golf player or the hockey player.*
4. *Marco is either the contestant who got 25 votes or the golf player.*
5. *Marco played football.*

The contestants were: Isaac, Marco, Sergio, and Tommy.
The sports they played were: basketball, football, golf, hockey
The number of votes they received were: 4, 11, 18, 25

When you complete the rules that you are asked to encode, make sure to use the following predicates:

```
played(C, S) - contestant C played sport S
received(C, N) - contestant C received N votes
```

(2). (50 points) Complete the code in *ex2.txt* to solve the following problem using the generate-and-test methodology:

A group of 6 people (labeled from 1 to 6) go to a retreat where they do an exercise in which they are all supposed to sit in a circle. There are 6 spots (also labeled from 1 to 6) marked on the floor indicating where they could each sit.

We know that some people like other people in the group, which is represented by the relation likes*(X, Y) – person X likes person Y. We also know that there are people in the group who dislike each other, which is represented by the relation* dislikes*(X, Y) – person X dislikes person Y. Assume that* likes *and* dislikes *are symmetric relations.*

Your job is to find an assignment of people to spots on the floor such that:

- *people who like each other sit next to each other and*

- *people sitting next to each other do not dislike each other.*

Of course, each person should be assigned to exactly one spot and each spot should have exactly one person assigned.

Note that, in some scenarios (e.g., if everybody dislikes everybody), this problem may not have a solution.

Use and extend the starter code provided in the file *ex2.txt*. Make sure to define the following relation (i.e., write a rule or rules about it):

`assigned(P, S)` – person P is assigned spot S