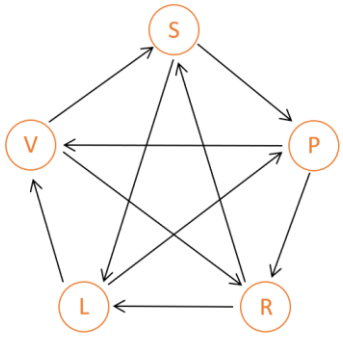
CCDSTRU Project Specifications
Term 3, AY 2020–2021
Due: **Sept 12, 2021 (Su)**

Implement a computer program (either in C or Java) following the specifications of the system given below.

Applicable Sets

- **A** : {R, P, S, L, V}
- **M** : **A** × **A**
- **D** : as represented below
- **B** : { $x \in Z \mid -4 < x < 4$}
- **C** : {true, false}



System Variables

- **Uno**, **Dos** ⊆ **A**
- **T, E, G, F** ⊆ **M**
- *pos* ∈ **B**
- *over* ∈ **C**

System Facts

- **T** is a relation on **A** that is reflexive, symmetric, antisymmetric, and transitive
- **E** = (**M** − **D**) − **T**
- *over* ↔ (*pos* = -3 ∨ *pos* = 3)

System Initialization

- **Uno, Dos** = ∅
- **G, F** = ∅
- *pos* = 0
- *over* = false

System States and Behavior

NextGame(*one* ∈ **A**, *two* ∈ **A**)

(|**F**| = 4) → **G** = {*two*} x {*one*}
- **G** ⊆ **D** → *pos* = -3
- **G** ⊆ **E** → *pos* = 3

(*one*∉**Uno** ∧ *two*∉**Dos** ∧ |**F**|<4) → **Uno** = **Uno** ∪ {*one*}
Dos = **Dos** ∪ {*two*}
G = {*two*} x {*one*}
F = F ∪ **G**
- **G** ⊆ **D** → *pos*--
- **G** ⊆ **E** → *pos*++

MatchOver(*over*)

result ∈ {Uno Wins, Dos Wins}
pos = 3 → *result* = Uno Wins
pos = -3 → *result* = Dos Wins