**Axelrod Style Tournaments**

**Phil 444 – Feb 21, 2023**

**Basic Game**

|  |  |  |
| --- | --- | --- |
|  | **C** | **D** |
| **C** | 3,3 | 0,5 |
| **D** | 5,0 | 1,1 |

**Tournament Design**

Everyone plays 10 rounds ‘against’ every other strategy. The points from each game (i.e., each of the 10 rounds against each of the n-1 other strategies) add up, and the strategy with the most points wins.

**Strategies**

A – Alternate. Play C then D then C then D etc.

B – Tit for Tat: Play C at first round. On every subsequent round, play whatever the other person played the previous time.

C – All C: Play C every time.

D – All D: Play D every time.

E – Grim Trigger: Play C until the other person plays D. Then play D every time.

F – Tester: Play DCC over the first three rounds. If the other person never plays D over those three rounds, play D every time. Otherwise, play whatever the other person played the previous time.

G – TF2T: Play C first two times. Then play D if the other person plays D both the last two times, C otherwise.

H – 2TFT: Play C first two times. Then play C if the other person plays C both the last two times, D otherwise.

I – TFTE: Play TFT for the first 9 moves, then D on the last move.

**A Basic Tournament**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B | C | D | Total |
| B | -- | 30 | 9 | 39 |
| C | 30 | -- | 0 | 30 |
| D | 14 | 50 | -- | 64 |

In this tournament, all D wins.

**A Complicated Tournament**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | Total |
| A | -- |  |  |  |  |  |
| B |  | -- | 30 | 9 |  |  |
| C |  | 30 | -- | 0 |  |  |
| D |  | 14 | 50 | -- |  |  |
| E |  |  |  |  | -- |  |

Exercise: Fill in the gaps and figure out who wins.

**A More Complicated Tournament**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F | G | Total |
| A | -- |  |  |  |  |  |  |  |
| B |  | -- | 30 | 9 |  |  |  |  |
| C |  | 30 | -- | 0 |  |  |  |  |
| D |  | 14 | 50 | -- |  |  |  |  |
| E |  |  |  |  | -- |  |  |  |
| F |  |  |  |  |  | -- |  |  |
| G |  |  |  |  |  |  | -- |  |

Exercise: Fill in the gaps and figure out who wins.

**A Much More Complicated Tournament**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F | G | H | I | Total |
| A | -- |  |  |  |  |  |  |  |  |  |
| B |  | -- | 30 | 9 |  |  |  |  |  |  |
| C |  | 30 | -- | 0 |  |  |  |  |  |  |
| D |  | 14 | 50 | -- |  |  |  |  |  |  |
| E |  |  |  |  | -- |  |  |  |  |  |
| F |  |  |  |  |  | -- |  |  |  |  |
| G |  |  |  |  |  |  | -- |  |  |  |
| H |  |  |  |  |  |  |  | -- |  |  |
| I |  |  |  |  |  |  |  |  | -- |  |

We won’t do this in class, but do get a sense of how the game is played, it might be a good idea to think about how this table would look.