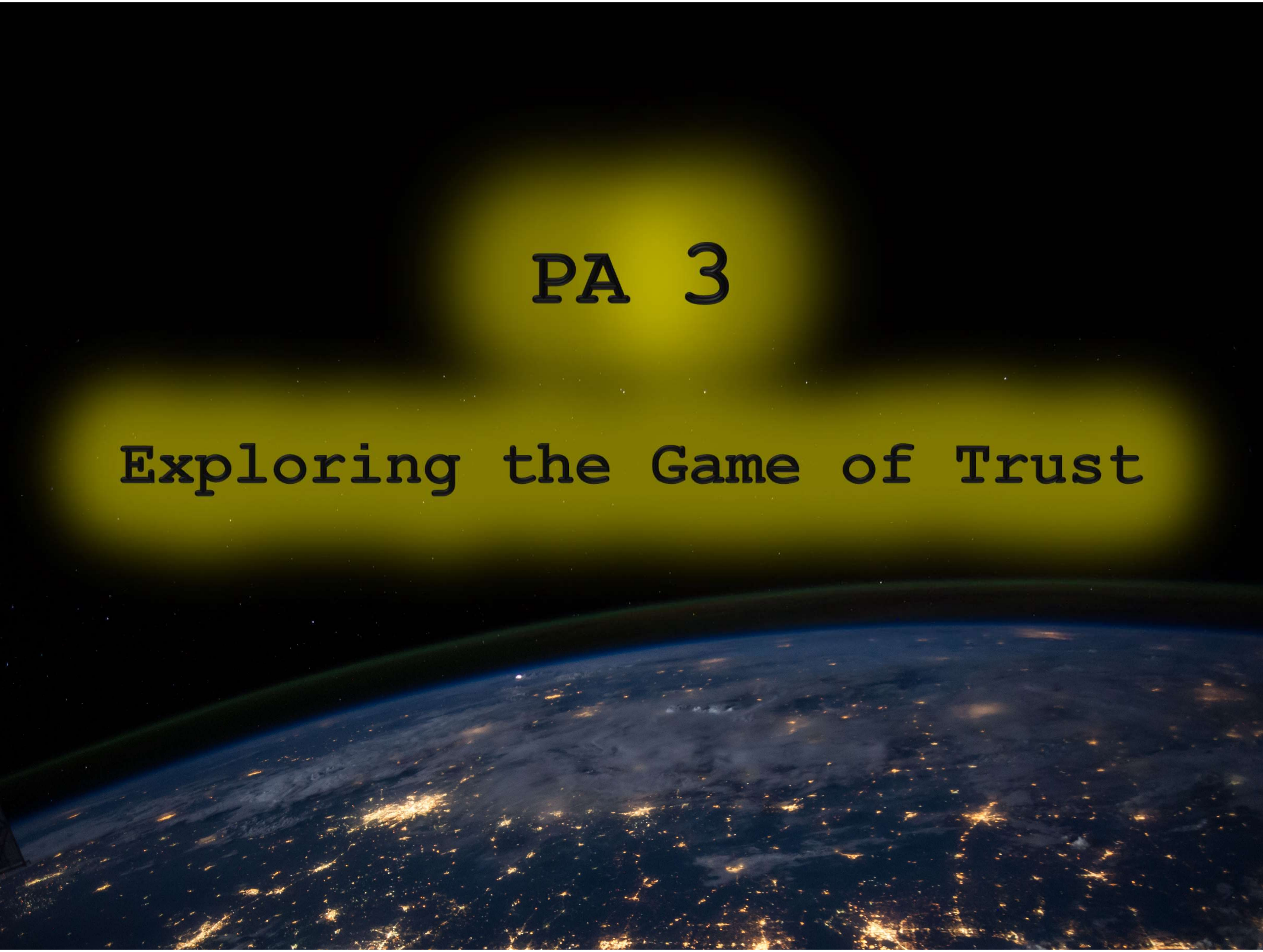
PA 3

Exploring the Game of Trust



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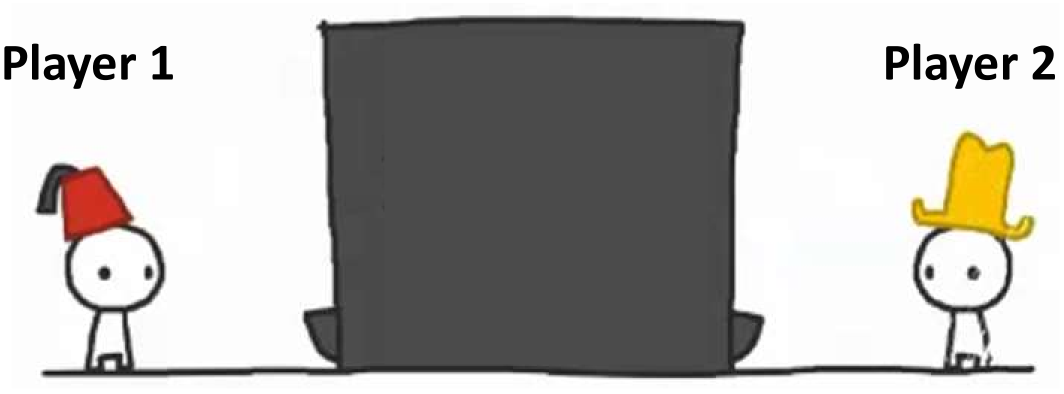
DISCUSSION

https://ncase.me/trust/

Player 1

Player 2



Player 1 plays

Pretend you are player 1

		1 (cooperate)	0 (cheat)
Player 2 plays			

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DISCUSSION

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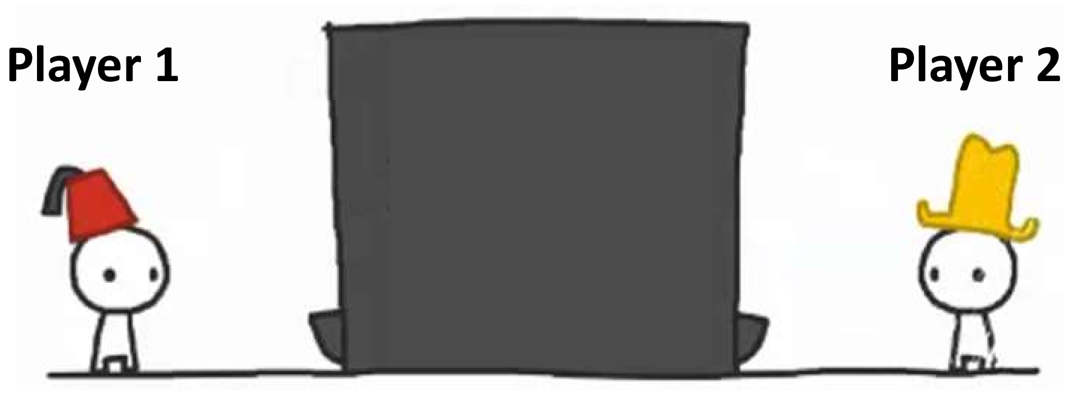

Player 1 plays

Player 2 plays

		1 (cooperate)	0 (cheat)
Player 2 plays	1 (cooperate)	Player 1 gets 2 points Player 2 gets 2 points	Player 1 gets 3 points Player 2 gets -1 points
	0 (cheat)	Player 1 gets -1 points Player 2 gets 3 points	Player 1 gets 0 points Player 2 gets 0 points

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DISCUSSION

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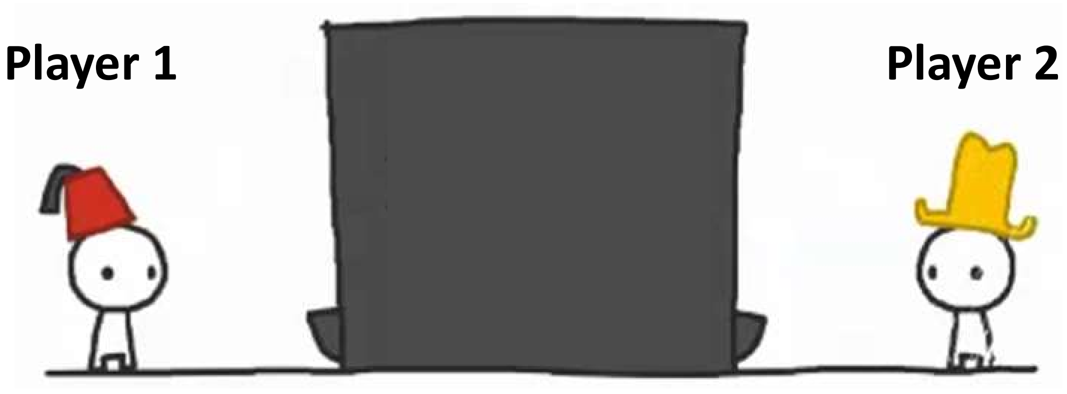

Part 1

Player 1 `get_player_move()`

Player 2 `get_player_move()`

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DISCUSSION

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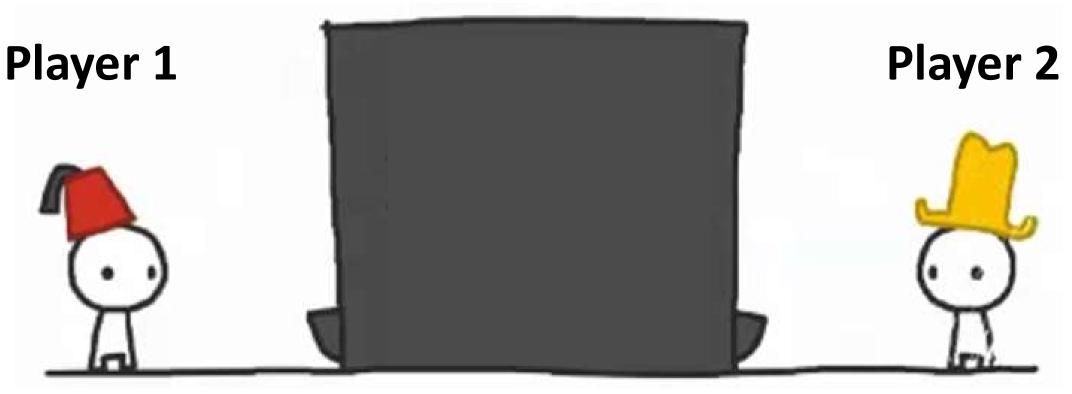

Part 2

Player 1 `get_player_move()`

Player 2 `get_computer_move()` `get_computer_move2()`

ALWAYS_COOPERATE	COPYCAT
MOSTLY_CHEAT	GRUDGER
JOKER	COPYKITTEN (extra credit)

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DISCUSSION

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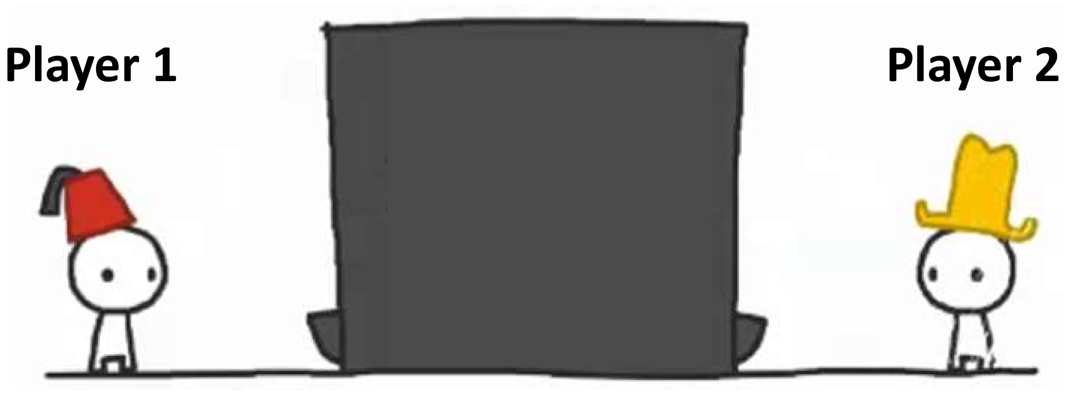

Compiling:
(see Appendix B)

```
gcc got_2player.c -o run_2player
```

gcc *<C-file>* -o *<executable>*

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DISCUSSION

- Probability example

```
// Returns 1 with a probability (chance)
// given by PROBABILITY. Otherwise returns 0.
int flip_coin();
```

```
#include <stdio.h>
#define PROBABILITY 0.5

int main() {
  int i, val;
  for (i=0; i < 20; i++) {
    val = flip_coin();
    printf("%d ", val);
  }
}
```

[A]
```
0 1 1 0 1 0 0 0 1 1 0 1 0 1 1 1 0 1 0 0
```

[B]
```
0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0
```

[C]
```
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

[D]
```
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
```

[E]
```
0.5  0.5  0.5  0.5  0.5 0.5  0.5  0.5  0.5  0.5
0.5  0.5  0.5  0.5  0.5 0.5  0.5  0.5  0.5  0.5
```

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DISCUSSION

- Probability example

```
// Returns 1 with a probability (chance)
// given by PROBABILITY. Otherwise returns 0.
int flip_coin();
```

```
#include <stdio.h>
#define PROBABILITY 0.5

int main() {
  int i, val;
  for (i=0; i < 20; i++) {
    val = flip_coin();
    printf("%d ", val);
  }
}
```

```
0 1 1 0 1 0 0 0 1 1 0 1 0 1 1 1 0 1 0 0
```

```
#include <stdio.h>
#define PROBABILITY 0.1

int main() {
  int i, val;
  for (i=0; i < 20; i++) {
    val = flip_coin();
    printf("%d ", val);
  }
}
```

```
0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0
```

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DISCUSSION

- Random numbers

```
srand(time(NULL))          // Seeds the random number generator
                           // Only do this once in your program
```

Set current position in the sequence

```
rand()                     // Returns a random integer
                           // between 0 and RAND_MAX (inclusive)
```

Get number at the current position in the sequence and go to the next position

2 9 3 1 0 3 4 7 4 5 8 1 2 6 8 0 6 1 3 2 6 4 1 0 4 8 5 3 2 9 7 9 1 7 7 2 5 0 8

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DISCUSSION

```
#include <stdio.h>

int main() {
  int i, val;

  for (i=0; i < 10; i++) {

    val = rand();
    printf("%d ", val);
  }
}
```

```
2 9 3 1 0 3 4 7 4 5
2 9 3 1 0 3 4 7 4 5
```

First time I run the program

Second time I run the program

⬇

```
2 9 3 1 0 3 4 7 4 5 8 1 2 6 8 0 6 1 3 2 6 4 1 0 4 8 5 3 2 9 7 9 1 7 7 2 5 0
```

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DISCUSSION

```c
#include <stdio.h>

int main() {
  int i, val;
  srand(time(NULL));
  for (i=0; i < 10; i++) {

    val = rand();
    printf("%d ", val);
  }
}
```

```
3 4 7 4 5 8 1 2 6 8
6 4 1 0 4 8 5 3 2 9
```

First time I run the program

Second time I run the program

```
2 9 3 1 0 3 4 7 4 5 8 1 2 6 8 0 6 1 3 2 6 4 1 0 4 8 5 3 2 9 7 9 1 7 7 2 5 0
```

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DISCUSSION

```
#include <stdio.h>

int main() {
  int i, val;

  for (i=0; i < 10; i++) {
    srand(time(NULL));
    val = rand();
    printf(“%d ”, val);
  }
}
```

```
3 3 3 3 3 3 4 4 4 4
6 6 6 6 6 6 6 6 6 6
```

First time I run the program

Second time I run the program

```
2 9 3 1 0 3 4 7 4 5 8 1 2 6 8 0 6 1 3 2 6 4 1 0 4 8 5 3 2 9 7 9 1 7 7 2 5 0
```

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DISCUSSION

- Random numbers

```
srand(time(NULL))        // Seeds the random number generator
                         // Only do this once in your program
```

Set current position in the sequence

```
rand()                   // Returns a random integer
                         // between 0 and RAND_MAX (inclusive)
```

Get number at the current position in the sequence and go to the next position

2 9 3 1 0 3 4 7 4 5 8 1 2 6 8 0 6 1 3 2 6 4 1 0 4 8 5 3 2 9 7 9 1 7 7 2 5 0