BetLang

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Programming Language Purpose & Philosophy

- BetLang is a DSL with the purpose of simulating casino games to determine the likelihood of winning.

- My inspiration to make this language was from my favorite game CS2
  - In game there is a loot box feature where you open cases for a chance to get a digital skin.

- BetLang brings awareness to gambling and lets people gamble in a safe and simulated environment.

- BetLang aims to explore the likelihood of profiting or losing money from gambling.
  - Users can experiment with different betting strategies.

Programming Language Style

- This language will use a simple syntax that includes conditions, functions, and multiple games.

- Grammar (BetLang.tx): Defines the syntax for commands like bankroll, bet, for, if, and simulate.

- Interpreter (gamble.py): Parses and interprets the language, executes commands and provides the output.

- Data types that will be used are integers

- Libraries: random

Program 1: demonstrates betting on different games

```
≡ betLang.tx
  7    Command:
  8      InitialCommand | BetCommand | ForLoop | IfSt
  9    ;
 10
 11    //initialize starting money
 12    InitialCommand:
 13      'bankroll' amount=INT
 14    ;
 15
 16    BetCommand:
 17      'bet' amount=INT 'on' gameCall=GameCall
 18    ;
```

```
≡ betLang.tx
 50    GameCall:
 51      RouletteCall | CoinFlipCall | SlotsCall
 52    ;
 53
 54    RouletteCall:
 55      name='roulette' color = STRING
 56    ;
 57
 58    CoinFlipCall:
 59      name='coinflip' side = STRING
 60      ;
 61
 62    SlotsCall:
 63      name='slots'
 64      ;
```

```
≡ program11.gmb
  1    LetsGamble
  2      bankroll 200
  3      bet 50 on coinflip "heads"
  4      bet 50 on coinflip "tails"
  5      bet 50 on roulette "black"
  6      bet 50 on roulette "red"
  7      bet 50 on slots
  8    quit
```

```
🤑 Welcome to BetLang Casino!
💰 Starting bankroll: 200
🪙 Bet 50 on coinflip heads
Coin flips... Result: 🙂 tails
📉 You lose 50. New bankroll: 150
🪙 Bet 100 on coinflip tails
Coin flips... Result: 🙂 heads
📉 You lose 100. New bankroll: 50
🪙Bet 50 on roulette black
Roulette spins... Result: ⚫ black
📈 You win 50! New bankroll: 100
🪙Bet 100 on roulette red
Roulette spins... Result: ⚫ black
📉 You lose 100. New bankroll: 0
❌ Not enough funds to bet 50. Current bankroll: 0
```

Program 2: demonstrates for-loop command

```
≡ betLang.tx
20      ForLoop:
21        'for' 'i' '=' start=INT 'to' end=INT 'do'
22           commands+=Command+
23        'end'
24      ;
```

```
≡ program20.gmb
1    LetsGamble
2      bankroll 100
3      for i = 0 to 3 do
4         bet 10 on slots
5         bet 50 on roulette "black"
6      end
7      quit
```

```
🤑 Welcome to BetLang Casino!
🪙 Starting bankroll: 100
🔄 Loop iteration 0
🟡 Bet 10 on slots
🎰 Spin result: 🍋 | ❇ | 7️
📉 No match. You lose 10. New bankroll: 90
🟡Bet 50 on roulette black
Roulette spins... Result: ⚫ black
📈 You win 50! New bankroll: 140
🔄 Loop iteration 1
🟡 Bet 10 on slots
🎰 Spin result: 🔔 | 🍒 | 🍋
📉 No match. You lose 10. New bankroll: 130
🟡Bet 50 on roulette black
Roulette spins... Result: ⚫ black
📈 You win 50! New bankroll: 180
🔄 Loop iteration 2
🟡 Bet 10 on slots
🎰 Spin result: 🍒 | 🔔 | 7️
📉 No match. You lose 10. New bankroll: 170
🟡Bet 50 on roulette black
Roulette spins... Result: 🟢 green
📉 You lose 50. New bankroll: 120
🔄 Loop iteration 3
🟡 Bet 10 on slots
```

Program 3: demonstrates if-statement

```
26    IfStatement:
27        'if' '(' condition=Condition ')' '{' ifComm
28        elifBlocks*=ElifBlock
29        elseBlock=ElseBlock?
30    ;
31
32    ElifBlock:
33        'elif' '(' condition=Condition ')' '{' elif
34
35    ElseBlock:
36        'else' '{' elseCommands+=Command* '}';
37
38    Condition:
39        left=ID op=Comparator right=INT;
40
41    Comparator:
42        '>' | '>=' | '<' | '<=' | '==' | '!=';
```

```
1    LetsGamble
2        bankroll 200
3        for i = 0 to 3 do
4            if (bankroll > 100) {
5                bet 50 on roulette "black"
6                bet 50 on slots
7            }
8
9            elif (bankroll == 100) {
10               bet 50 on coinflip "tails"
11           }
12
13           else {
14               bet 50 on coinflip "heads"
15           }
16       end
17   quit
```

```
😬 Welcome to BetLang Casino!
⏱ Starting bankroll: 200
🔄 Loop iteration 0
🟡Bet 50 on roulette black
Roulette spins... Result: 🟢 green
📉 You lose 50. New bankroll: 150
🟡 Bet 50 on slots
🎰 Spin result: ✳ | 🔔 | 🍒
📉 No match. You lose 50. New bankroll: 100
🔄 Loop iteration 1
🟡 Bet 50 on coinflip tails
Coin flips... Result: 🙂 heads
📉 You lose 50. New bankroll: 50
🔄 Loop iteration 2
🟡 Bet 50 on coinflip heads
Coin flips... Result: 😐 heads
📈 You win 50! New bankroll: 100
🔄 Loop iteration 3
🟡 Bet 50 on coinflip tails
Coin flips... Result: 😳 tails
📈 You win 50! New bankroll: 150
```

Program 4: demonstrates simulate command

```
LetsGamble
  bankroll 1000
  simulate 10
    for i = 0 to 5 do
        if (bankroll > 500) {
          bet 250 on coinflip "heads"
          bet 250 on coinflip "tails"
        }

        elif (bankroll > 200) {
          bet 200 on slots
        }

        else {
          bet 100 on roulette "black"
        }
    end
  stop
quit
```

```
Final bankroll for simulation 8: 300
Final bankroll for simulation 9: 1400
🔁 Loop iteration 2
🟡 Bet 200 on slots
🎰 Spin result: ☘ | 💎 | 🍒
📉 No match. You lose 200. New bankroll: 100
🔁 Loop iteration 3
🟡Bet 100 on roulette black
Roulette spins... Result: 🔴 red
📉 You lose 100. New bankroll: 0
🔁 Loop iteration 4
❌ Not enough funds to bet 100. Current bankroll: 0
🔁 Loop iteration 5
❌ Not enough funds to bet 100. Current bankroll: 0
Final bankroll for simulation 10: 0

📊 Simulation Summary:
Profitable runs: 3/10
Loss runs: 6/10
Bankrupt runs: 1/10
```

Program 5: demonstrates FizzBuzz program

```
≡ fizzbet.gmb
1    LetsGamble
2      bankroll 100
3      for i = 0 to 3 do
4        if (bankroll == 100) {
5        bet 50 on coinflip "heads"
6        }
7        elif (bankroll > 50) {
8            bet 30 on roulette "black"
9        }
10       elif (bankroll > 20) {
11           bet 20 on coinflip "tails"
12       }
13       else {
14           bet 10 on slots
15       }
16     end
17   quit
```

```
🤑 Welcome to BetLang Casino!
💰 Starting bankroll: 100
🔁 Loop iteration 0
🪙 Bet 50 on coinflip heads
Coin flips... Result: 🙂 heads
📈 You win 50! New bankroll: 150
🔁 Loop iteration 1
🪙Bet 30 on roulette black
Roulette spins... Result: ⚫ black
📈 You win 30! New bankroll: 180
🔁 Loop iteration 2
🪙Bet 30 on roulette black
Roulette spins... Result: ⚫ black
📈 You win 30! New bankroll: 210
🔁 Loop iteration 3
🪙Bet 30 on roulette black
Roulette spins... Result: 🔴 red
📉 You lose 30. New bankroll: 180
```

Future Improvements

- Adding more games like: blackjack, blackjack conditionals, craps, etc.
- Adding more functions like: multiple conditional statements, total profit counter, etc.

Thank You for Listening!