Die Game Project

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Requirement

Two players roll a die.

Ask the players for their name. Simulate the die with a random function.

If a player has a higher score than the other one, this player wins and the output should be <name player> wins with a score of <score>

If they roll the same number, they have to flip a coin. Result of this is either Heads or Tails.

If a player has Heads he wins and you have to output this with <player name> wins by flipping a coin to Heads.

If both player have Heads or both player have Tails they have to roll the die again.

If one player an odd number now, he wins. Output <name player> wins by rolling odd number.

If they both have an odd numbers or both have an even numbers, then ask the players to enter their age.

The oldest player wins! Output should be <name player> is <age> years old and therefor wins this game.

Pseudo code

```
FUNC die(): INT
        RETURN (1 + int(random() * 6))
ENDFUNC

FUNC coin(): BOOL
        IF random() < 0.5 THEN
                RETURN True
        ELSE
                RETURN False
        ENDIF
ENDFUNC

DECLEAR p1_name: STRING
p1_name <- INPUT("Player 1, please input your name")
DECLEAR p2_name: STRING
p2_name <- INPUT("Player 2, Please input your name")

DECLEAR p1_value: UNDEF
p1_value <- die()

DECLEAR p2_value: UNDEF
p2_value <- die()

IF p1_value > p2_value THEN
        OUTPUT (p1_name, " wins with a value of ", p1_value)
        EXIT
ELSE IF p2_value > p1_value THEN
        OUTPUT (p2_name, " wins with a value of ", p2_value)
        EXIT

ENDIF

p1_value = coin()
p2_value = coin()

IF p1_value != p2_value THEN
        IF p1_value == True THEN
                OUTPUT (p1_name, " wins by flipping a coin to Heads.")
        ELSE
                OUTPUT (p2_name, " wins by flipping a coin to Heads.")
        ENDIF
        EXIT
ENDIF

p1_value = die()
p2_value = die()

IF p2_value % 2 != p1_value % 2 THEN
        IF p1_value % 2 == 1 THEN
                OUTPUT (p1_name, " wins by rolling an odd number.")
        ELSE
                OUTPUT (p2_name, " wins by rolling an odd number.")
        ENDIF
```

```
        EXIT
ENDIF

WHILE True
        p1_value = INPUT (p1_name, "Please input your age.")
        IF p1_value >= 0 THEN
                BREAK
        ENDIF
        OUTPUT "Sorry, this is not a valid age!"
ENDWHILE


WHILE True
        p2_value = INPUT (p2_name, "Please input your age.")
        IF p2_value >= 0 THEN
                BREAK
        ENDIF
        OUTPUT "Sorry, this is not a valid age!"
ENDWHILE

IF p1_value > p2_value THEN
        OUTPUT (p1_name, " is ", p1_value, " years old and therefor wins this
game.")
ELSE IF p2_value > p1_value THEN
        OUTPUT (p2_name, " is ", p2_value, " years old and therefor wins this
game.")
ELSE
        OUTPUT "SORRY< NO WINNER!"
ENDIF
```

Python implementation

Environment required

Python3

Python3 third-party lib: None

Code

this code doesn’t include debugger break points

```
import random

# DECLEAR die: INT, no args  return the number of the die
def die():
    return 1 + int(random.random() * 6)

# DECLEAR coin: BOOL, no args  True means Head and False means tails
def coin():
    if random.random() < 0.5:
        return True
    else:
        return False


if __name__ == "__main__":
    # DECLEAR p1_name: STRING  player 1's name
    p1_name = str(input("Player 1, please input your name\n"))
    # DECLEAR p2_name: STRING  player 2's name
    p2_name = str(input("Player 2, please input your name\n"))

    # DECLEAR p1_value: undefined type  player 2's value
    p1_value = die()
    # DECLEAR p2_value: undefined type  player 1's value
    p2_value = die()

    if p1_value > p2_value:
        print(p1_name, " wins with a value of ", p1_value)
        exit()
    elif p2_value > p1_value:
        print(p2_name, " wins with a value of ", p2_value)
        exit()

    p1_value = coin()
    p2_value = coin()

    if p1_value != p2_value:
        if p1_value == True:
            print(p1_name + " wins by flipping a coin to Heads.")
        else:
            print(p2_name + " wins by flipping a coin to Heads.")
        exit()
```

```
    p1_value = die()
    p2_value = die()

    if p2_value % 2 != p1_value % 2:
        if p1_value % 2 == 1:
            print(p1_name + " wins by rolling an odd number.")
        else:
            print(p2_name + " wins by rolling an odd number.")
        exit()


    while True:
        try:
            p1_value = int(input(p1_name + ", please input your age.\n"))
            if p1_value >= 0:
                break
            print("Sorry, this is not a valid age!")
        except Exception:
            print("Sorry, this is not a number!")

    while True:
        try:
            p2_value = int(input(p2_name + ", please input your age.\n"))
            if p2_value >= 0:
                break
            print("Sorry, this is not a valid age!")
        except Exception:
            print("Sorry, this is not a number!")

    if p1_value > p2_value:
        print(p1_name, " is ", p1_value, " years old and therefor wins this game.")
    elif p2_value > p1_value:
        print(p2_name, " is ", p2_value, " years old and therefor wins this game.")
    else:
        print("SORRY! NO WINNER.")
```

Test

In the following tests, to meet the condition in the heading, some of the random value is changed with the debugger.

Win with die number

```
Player 1, please input your name
eric
Player 2, please input your name
martin
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(25)<module>()
-> p1_value = die()
(Pdb) list
 20         p2_name = str(input("Player 2, please input your name\n"))
 21
 22         pdb.set_trace()
 23
```

```
 24         # DECLEAR p1_value: undefined type  player 2's value
 25  ->     p1_value = die()
 26
 27         # DECLEAR p2_value: undefined type  player 1's value
 28         p2_value = die()
 29
 30
(Pdb) pp p1_name
'eric'
(Pdb) pp p2_name
'martin'
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(34)<module>()
-> if p1_value > p2_value:
(Pdb) list
 29
 30
 31
 32         pdb.set_trace()
 33
 34  ->     if p1_value > p2_value:
 35             print(p1_name, " wins with a value of ", p1_value)
 36             exit()
 37         elif p2_value > p1_value:
 38             print(p2_name, " wins with a value of ", p2_value)
 39             exit()
(Pdb) pp p1_value
5
(Pdb) pp p2_value
6
(Pdb) c
martin  wins with a value of  6
```

Win with age

```
Player 1, please input your name
eric
Player 2, please input your name
martin
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(25)<module>()
-> p1_value = die()
(Pdb) list
 20         p2_name = str(input("Player 2, please input your name\n"))
 21
 22         pdb.set_trace()
 23
 24         # DECLEAR p1_value: undefined type  player 2's value
 25  ->     p1_value = die()
 26
 27         # DECLEAR p2_value: undefined type  player 1's value
 28         p2_value = die()
 29
 30
(Pdb) pp p1_name
'eric'
(Pdb) pp p2_name
```

```
'martin'
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(34)<module>()
-> if p1_value > p2_value:
(Pdb) list
 29
 30
 31
 32         pdb.set_trace()
 33
 34  ->     if p1_value > p2_value:
 35             print(p1_name, " wins with a value of ", p1_value)
 36             exit()
 37         elif p2_value > p1_value:
 38             print(p2_name, " wins with a value of ", p2_value)
 39             exit()
(Pdb) pp p1_value
6
(Pdb) pp p2_value
4
(Pdb) !p1_value = 3
(Pdb) !p2_value = 3
(Pdb) # let them be the same
*** SyntaxError: unexpected EOF while parsing
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(46)<module>()
-> if p1_value != p2_value:
(Pdb) list
 41         p1_value = coin()
 42         p2_value = coin()
 43
 44         pdb.set_trace()
 45
 46  ->     if p1_value != p2_value:
 47             if p1_value == True:
 48                 print(p1_name + " wins by flipping a coin to Heads.")
 49             else:
 50                 print(p2_name + " wins by flipping a coin to Heads.")
 51             exit()
(Pdb) pp p1_value
False
(Pdb) pp p2_value
False
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(58)<module>()
-> if p2_value % 2 != p1_value % 2:
(Pdb) list
 53         p1_value = die()
 54         p2_value = die()
 55
 56         pdb.set_trace()
 57
 58  ->     if p2_value % 2 != p1_value % 2:
 59             if p1_value % 2 == 1:
 60                 print(p1_name + " wins by rolling an odd number.")
 61             else:
 62                 print(p2_name + " wins by rolling an odd number.")
```

```
 63             exit()
(Pdb) pp p1_value
3
(Pdb) pp p2_value
3
(Pdb) c
eric, please input your age.
114514
martin, please input your age.
1919810
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(85)<module>()
-> if p1_value > p2_value:
(Pdb) p1_value
114514
(Pdb) p2_value
1919810
(Pdb) c
martin  is  1919810  years old and therefor wins this game.
```

Win with coin

```
Player 1, please input your name
eric
Player 2, please input your name
martin
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(25)<module>()
-> p1_value = die()
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(34)<module>()
-> if p1_value > p2_value:
(Pdb) p1_value
5
(Pdb) p2_value
1
(Pdb) !p1_value = 3
(Pdb) !p2_value = 3
(Pdb) p1_value
3
(Pdb) p2_value
3
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(46)<module>()
-> if p1_value != p2_value:
(Pdb) list
 41         p1_value = coin()
 42         p2_value = coin()
 43
 44         pdb.set_trace()
 45
 46  ->     if p1_value != p2_value:
 47             if p1_value == True:
 48                 print(p1_name + " wins by flipping a coin to Heads.")
 49             else:
 50                 print(p2_name + " wins by flipping a coin to Heads.")
 51             exit()
(Pdb) p1_value
```

```
False
(Pdb) p2_value
False
(Pdb) p1_value = True
(Pdb) c
eric wins by flipping a coin to Heads.
```

Win with odd

```
Player 1, please input your name
eric
Player 2, please input your name
martin
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(25)<module>()
-> p1_value = die()
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(34)<module>()
-> if p1_value > p2_value:
(Pdb) p1_value
3
(Pdb) p2_value
6
(Pdb) !p1_value = 3
(Pdb) !p2_value = 3
(Pdb) p2_value
3
(Pdb) p1_value
3
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(46)<module>()
-> if p1_value != p2_value:
(Pdb) list
 41         p1_value = coin()
 42         p2_value = coin()
 43
 44         pdb.set_trace()
 45
 46  ->     if p1_value != p2_value:
 47             if p1_value == True:
 48                 print(p1_name + " wins by flipping a coin to Heads.")
 49             else:
 50                 print(p2_name + " wins by flipping a coin to Heads.")
 51             exit()
(Pdb) p1_value
True
(Pdb) p2_value
False
(Pdb) p2_value = True
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(58)<module>()
-> if p2_value % 2 != p1_value % 2:
(Pdb) list
 53         p1_value = die()
 54         p2_value = die()
 55
 56         pdb.set_trace()
```

```
 57
 58  ->     if p2_value % 2 != p1_value % 2:
 59             if p1_value % 2 == 1:
 60                 print(p1_name + " wins by rolling an odd number.")
 61             else:
 62                 print(p2_name + " wins by rolling an odd number.")
 63             exit()
(Pdb) p1_value
6
(Pdb) p2_value
4
(Pdb) !p2_value = 5
(Pdb) p1_value
6
(Pdb) p2_value
5
(Pdb) c
martin wins by rolling an odd number.
```

No winner

```
Player 1, please input your name
eric
Player 2, please input your name
martin
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(25)<module>()
-> p1_value = die()
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(34)<module>()
-> if p1_value > p2_value:
(Pdb) p1_value
2
(Pdb) p2_value
5
(Pdb) p2_value = 2
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(46)<module>()
-> if p1_value != p2_value:
(Pdb) p1_value
True
(Pdb) p2_value
False
(Pdb) p2_value = True
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(58)<module>()
-> if p2_value % 2 != p1_value % 2:
(Pdb) p1_value
5
(Pdb) p2_value
2
(Pdb) p2_value = 5
(Pdb) c
eric, please input your age.
114
martin, please input your age.
114
```

```
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(85)<module>()
-> if p1_value > p2_value:
(Pdb) c
SORRY! NO WINNER.
```

Idiot test

Input invalid characters when inputting the age

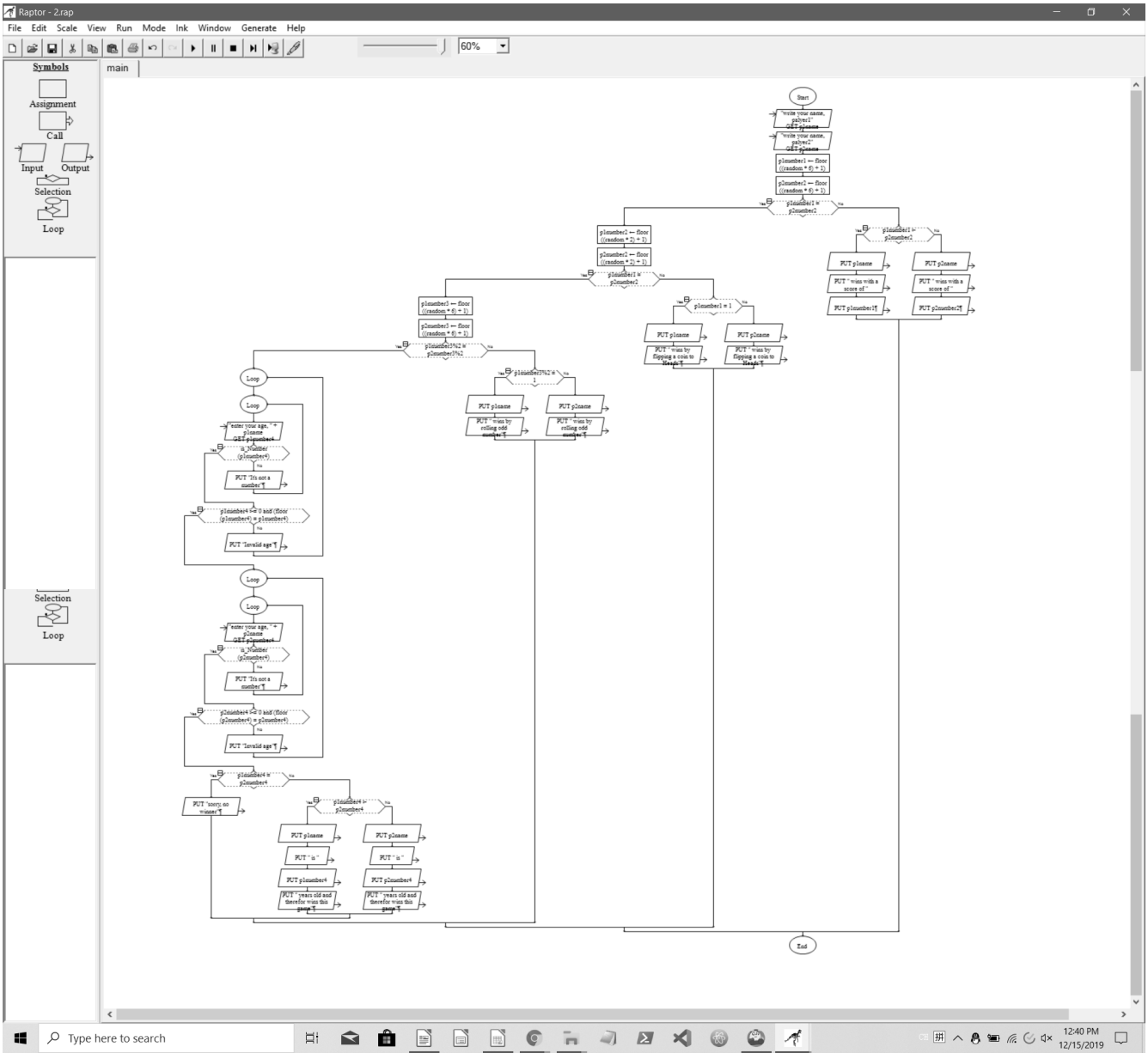
```
Player 1, please input your name
eric
Player 2, please input your name
martin
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(25)<module>()
-> p1_value = die()
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(34)<module>()
-> if p1_value > p2_value:
(Pdb) p1_value
1
(Pdb) p2_value
5
(Pdb) p1_value = 3
(Pdb) p2_value = 3
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(46)<module>()
-> if p1_value != p2_value:
(Pdb) p1_value
False
(Pdb) p2_value
True
(Pdb) p2_value = False
(Pdb) c
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(58)<module>()
-> if p2_value % 2 != p1_value % 2:
(Pdb) p1_value
1
(Pdb) p2_value
1
(Pdb) c
eric, please input your age.

Sorry, this is not a number!
eric, please input your age.
tfc KELU;'XMOK
Sorry, this is not a number!
eric, please input your age.
-1
Sorry, this is not a valid age!
eric, please input your age.
??
Sorry, this is not a number!
eric, please input your age.
                a               a
Sorry, this is not a number!
eric, please input your age.
```

```
114
martin, please input your age.
514
> c:\users\eric\documents\ib_inschool\ib_cs\python_pjt-0\a.debug.py(85)<module>()
-> if p1_value > p2_value:
(Pdb) c
martin  is  514  years old and therefor wins this game.
```

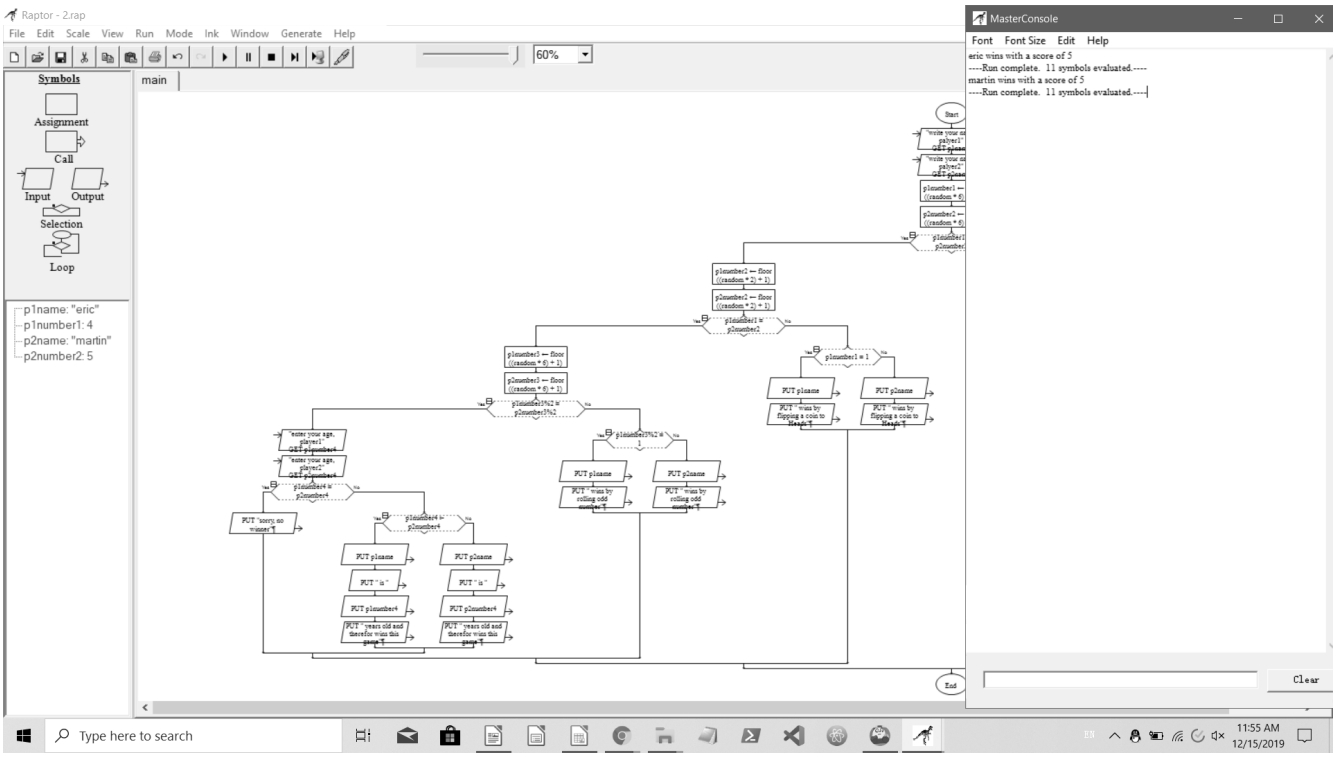
Raptor implementation

Raptor

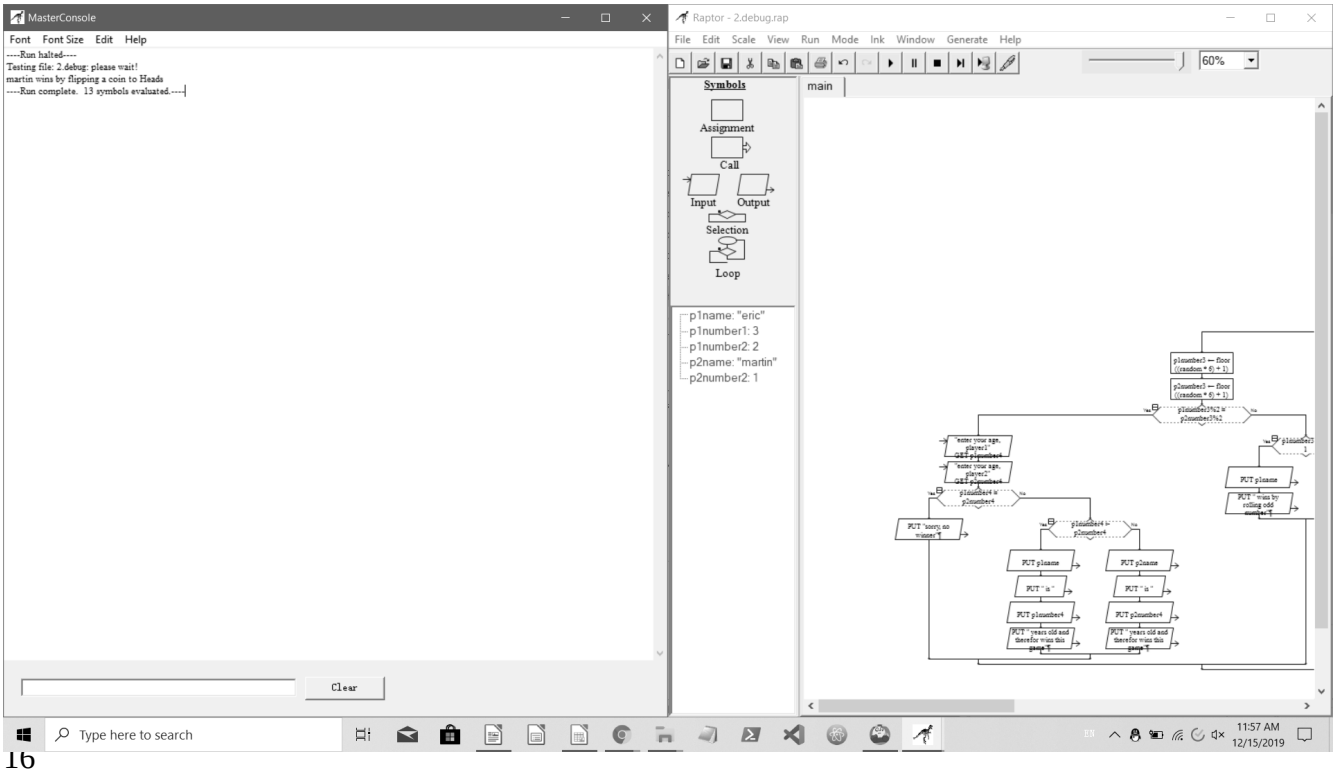


Test

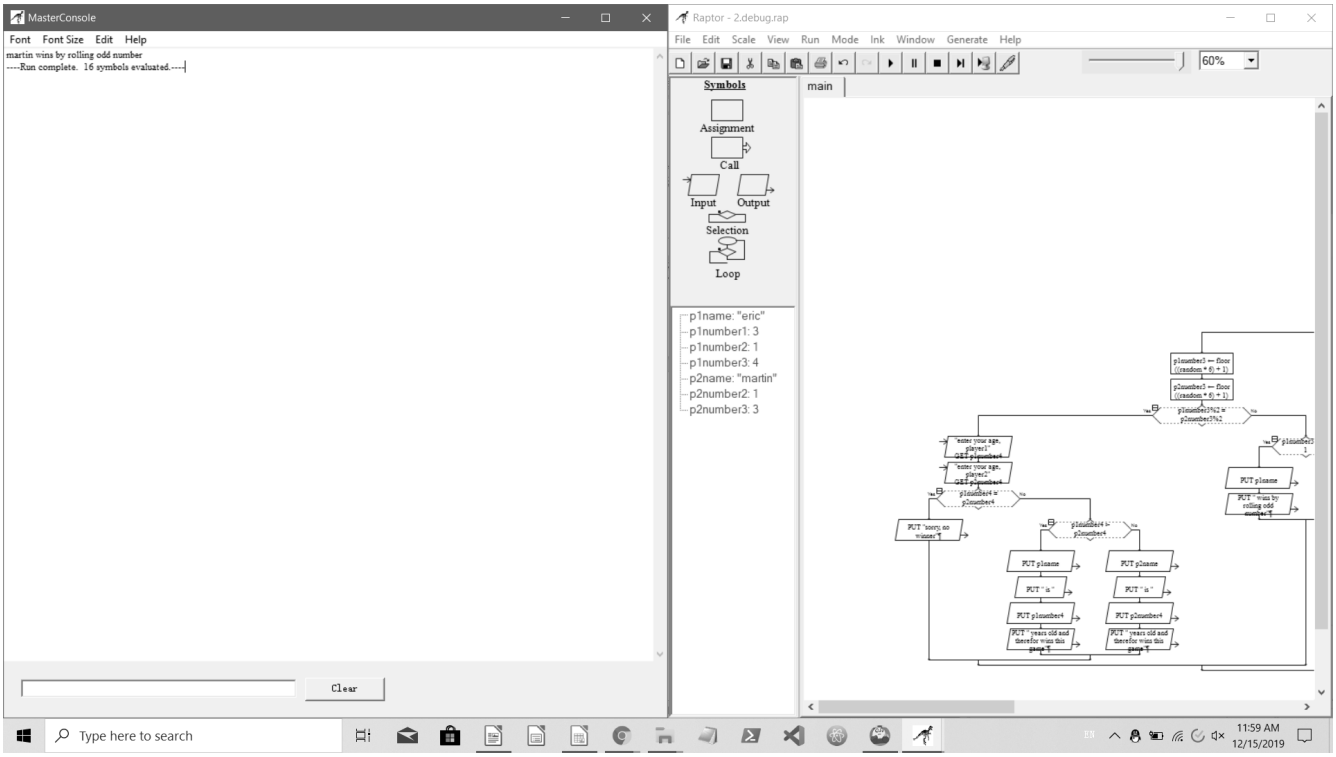
Win with score



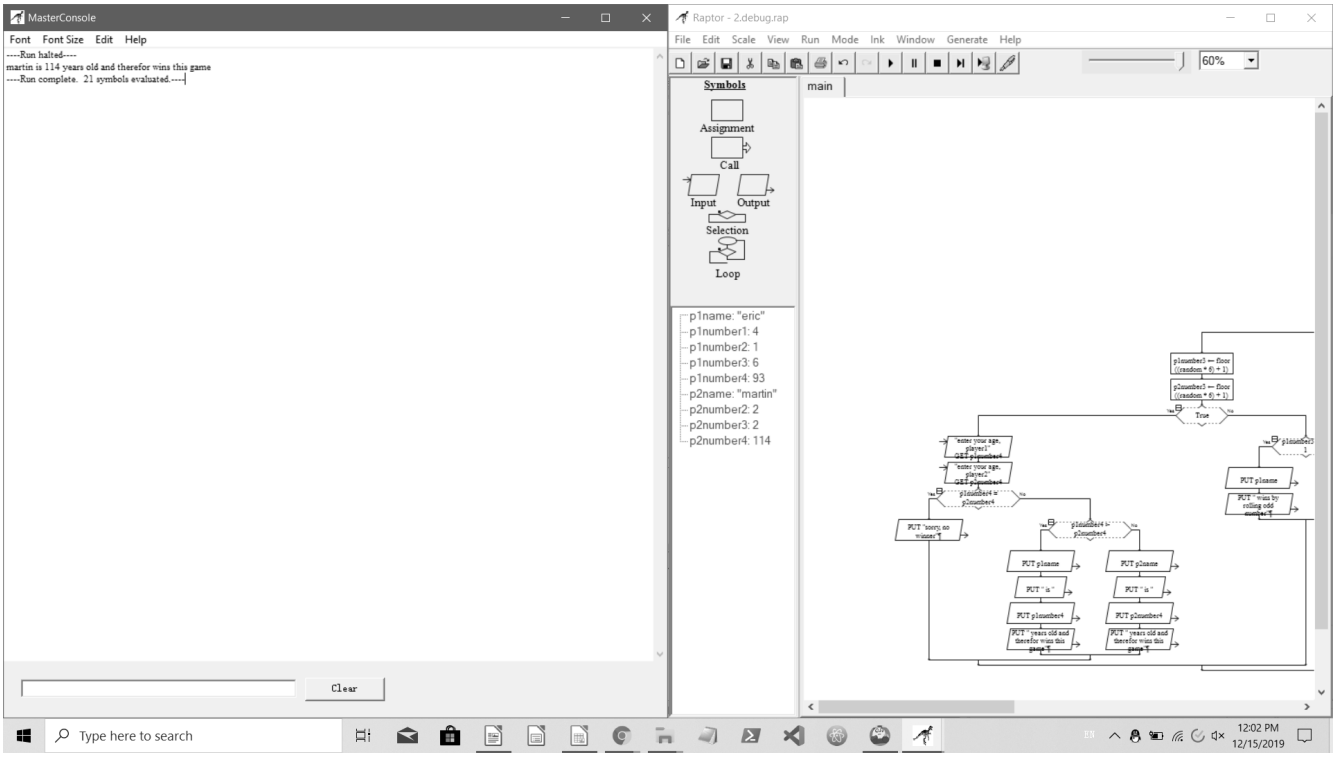
Win with coin



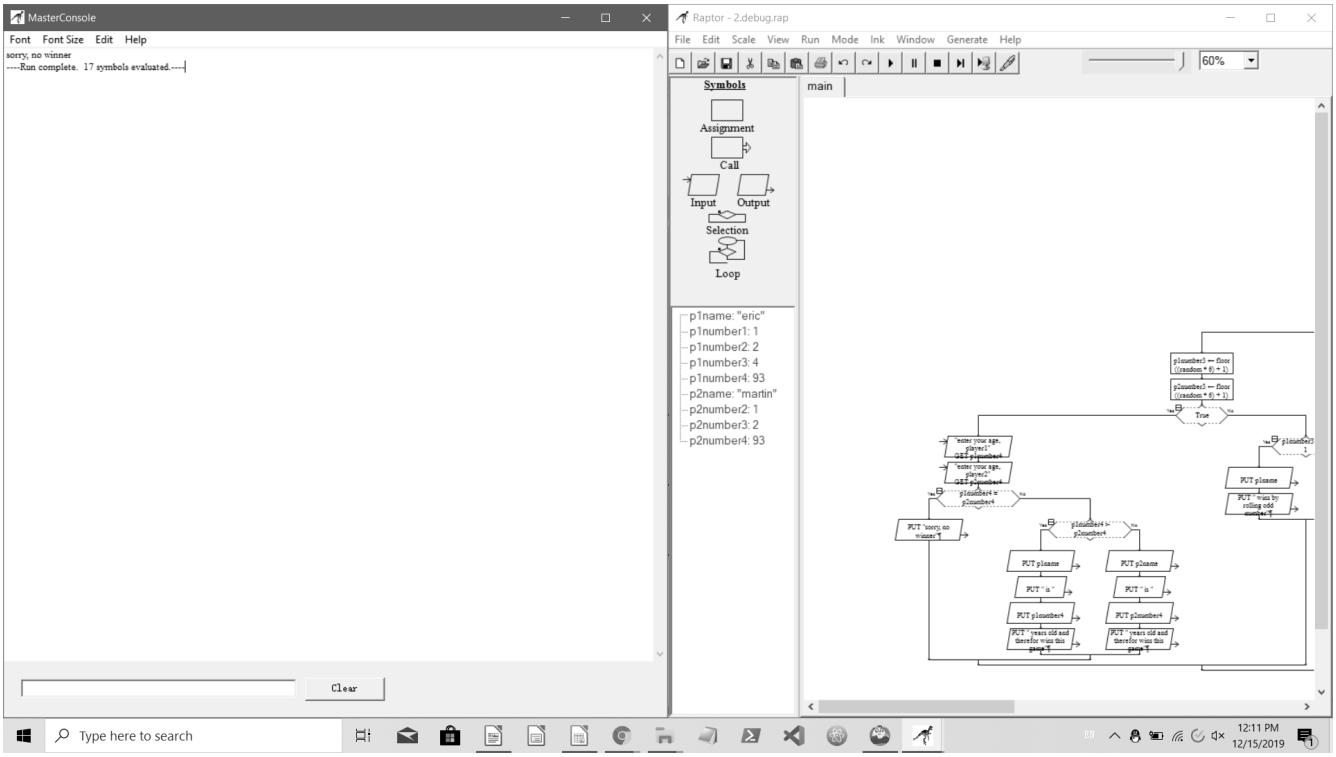
Win with odd



Win with age



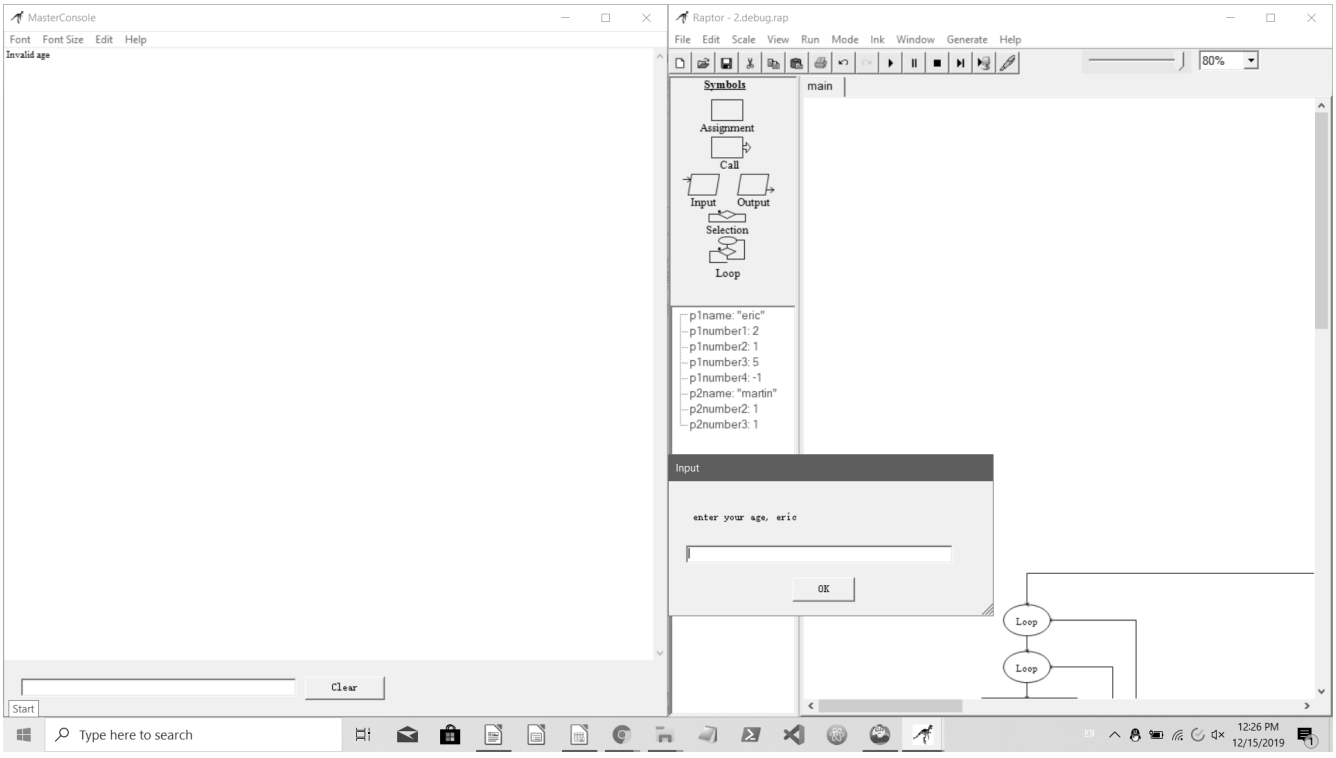
No winner



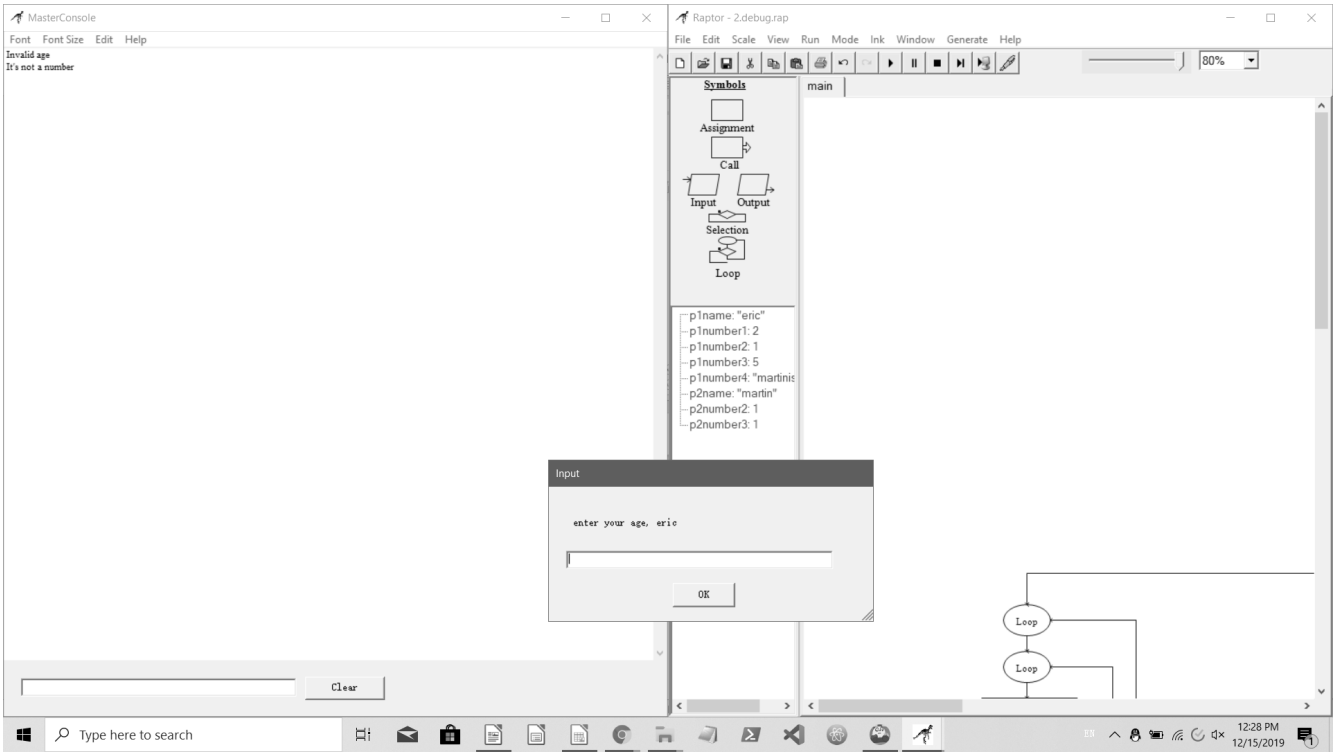
Idiot test

Input invalid characters when inputting the age

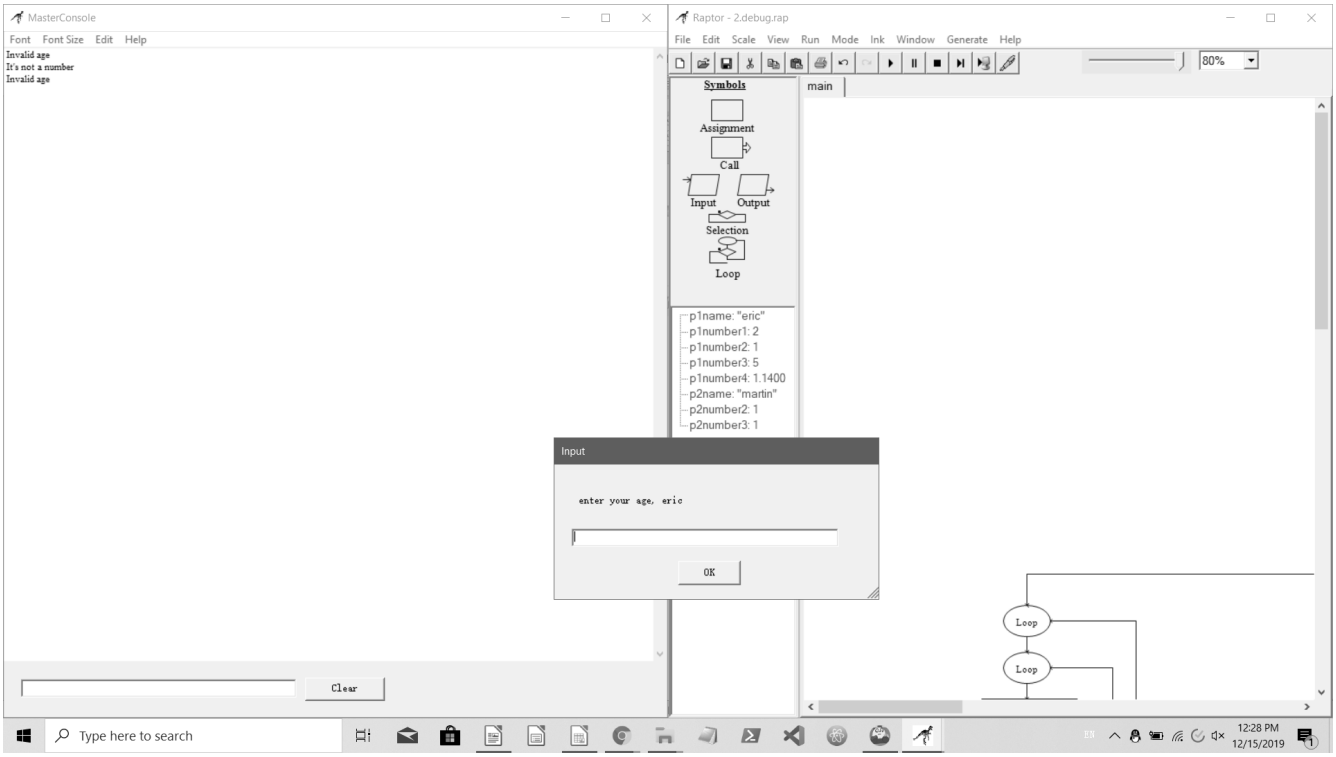
Input age smaller than 0



Input letter



Input decimal number



Input nothing