Program design project
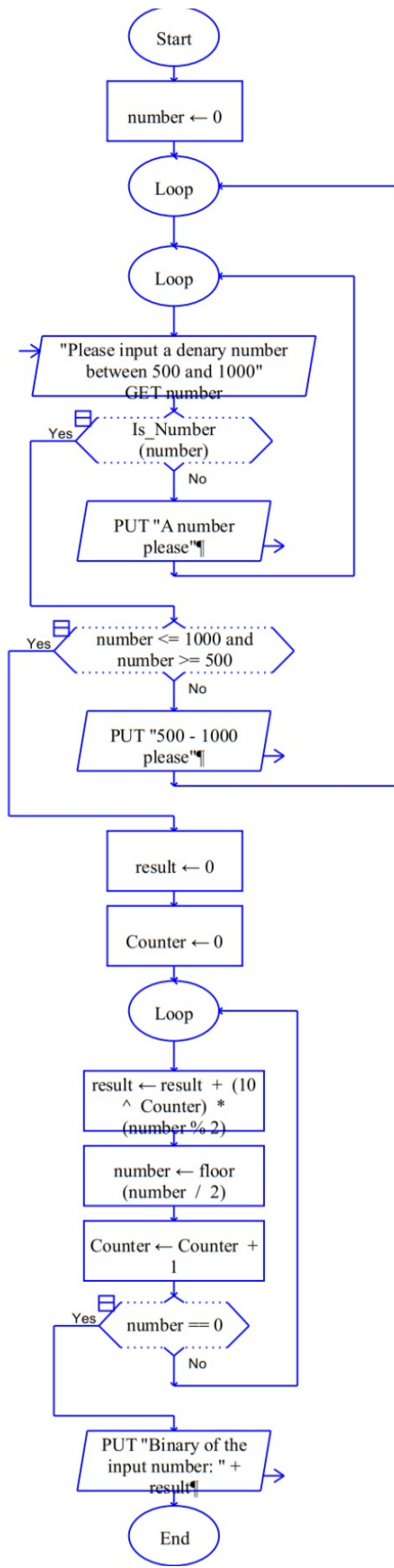
DP1-1 Eric Jin

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Program 1

Requirement

Ask a player for a denary number between 500 and 1000 and convert it to binary and put the result to the screen.

Pseudocode

```
1.  DECLEAR number: INTEGER
2.  number <- 0
3.  NumIn:
4.  INPUT "Please input a denary number between 500 and 1000" number
5.  IF number > 1000 or number < 500 THEN
6.    OUTPUT "Input invalid. Please input again."
7.    GOTO NumIn
8.  ENDIF
9.
10. DECLARE result: INTEGER
11. result <- 0
12.
13. WHILE True
14.   result <- result + (10 ^ Counter) * (number % 2)
15.   number <- number / 2
16.   IF number == 0 THEN
17.     BREAK
18.   ENDIF
19. ENDWHILE
20.
21. OUTPUT "The binary is: " result  s
```

Raptor flowchart

Start

number ← 0

Loop

Loop

"Please input a denary number between 500 and 1000"
GET number

Is_Number (number)   Yes

No

PUT "A number please"¶

number <= 1000 and number >= 500   Yes

No

PUT "500 - 1000 please"¶

result ← 0

Counter ← 0

Loop

result ← result + (10 ^ Counter) * (number % 2)

number ← floor (number / 2)

Counter ← Counter + 1

number == 0   Yes

No

PUT "Binary of the input number: " + result¶

End

Identifier table

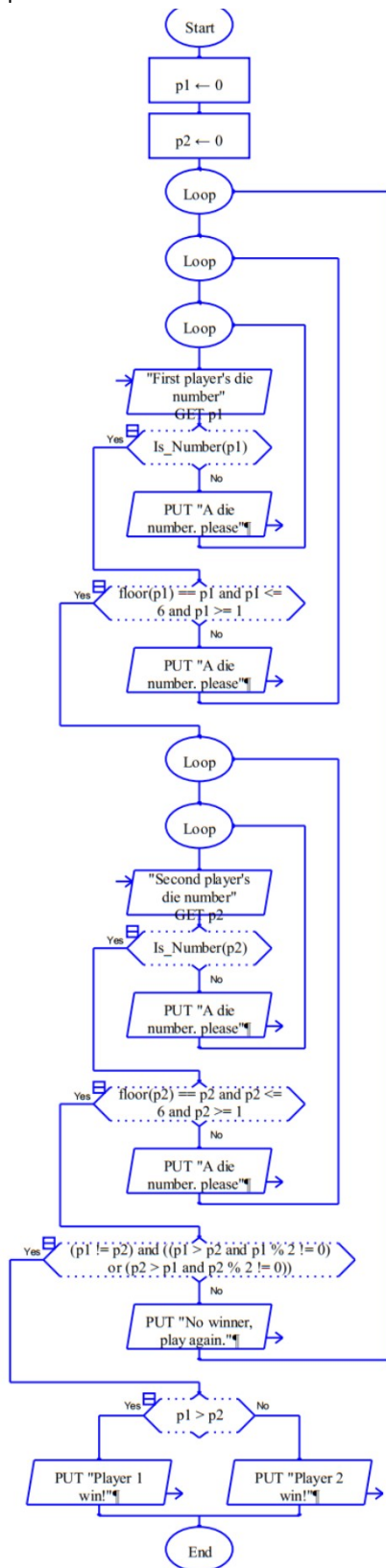| Variable name	Data type	Description
number	INTEGER	raw number inputted in denary
result	INTEGER	the binary string in denary of the number

Program 2

Requirement

Ask two players to role a die. The winner of the game is the one that has the highest number and whose score is odd. If this condition is not met, nobody wins and you play again.

Pseudocode

```
1.  DECLARE p1: INTEGER
2.  p1 <- 0
3.  DECLARE p2: INTEGER
4.  p2 <- 0
5.
6.  P1in:
7.  INPUT "First player's die number" p1
8.  IF p1 > 6 or p1 < 1 THEN
9.     OUTPUT "Please reinput a valid die number."
10.    GOTO P1in
11. ENDIF
12.
13. P2in:
14. INPUT "Second player's die number" p2
15. IF p2 > 6 or p2 < 1 THEN
16.    OUTPUT "Please reinput a valid die number."
17.    GOTO P2in
18. ENDIF
19.
20. IF p1 == p2 THEN
21.    OUTPUT "No winner, play again."
22.    GOTO P1in
23. ELSE IF p1 > p2 THEN
24.    IF p1 % 2 == 0 THEN
25.       OUTPUT "No winner, play again."
26.       GOTO P1in
27.    ELSE
28.       OUTPUT "Player 1 win"
29.    ENDIF
30. ELSE
31.    IF p2 % 2 == 0 THEN
32.       OUTPUT "No winner, play again."
33.       GOTO P1in
34.    ELSE
35.       OUTPUT "Player 2 win"
36.    ENDIF
37. ENDIF
```

Raptor flowchart

Identifier table

Variable name	Data type	Description
p1	INTEGER	player 1's die number
p2	INTEGER	player 2's die number