Blackjack

This is a casino game, with cards, in which the main objective is to have more points than the opponent, but without exceeding 21 (in which case you lose).

In this simplified version of Blackjack, the player plays against the "house"/"dealer" (the computer), according to the following rules:

- • In each attempt the player can ask for one more card or keep the hand s/he already has;
- • Each time the player draws a card, the computer does the same. In this case, we are only interested in the value of the card (1 to 10);
- • When the player stops calling for cards, the total score of each player is checked;
- • If any of the players exceeds the number 21, loses (if both exceed 21, we give preference to the player ... the house loses);
- • Wins whoever has the highest value after the rounds.

1 Game setup

Let's start by setting up the game, creating the function `blackjack()` with the following code in Python.

```
import random

def blackjack():
    print ("Vamos jogar o jogo do 21: ")

    # pontuação da casa e do jogador
    casa = 0
    jogador = 0
```

One of the advantages of creating a function is its possible reuse. Imagine creating a program that allows you to play several card games .. Or to be able to play the blackjack game several times, winning or losing your stake...

2 Iterating through plays - the game loop

The plays are repeated until the player does not want any more cards.

The game loop will have the option of the player wanting to continue asking for cards:

```
    while jogar == "sim":
        print ("Pontuacao do jogador: " + str(jogador))
        print ("Pontuacao da casa: " + str(casa))

        jogar = input("Pretende uma carta? ")
        if jogar == "sim":
```

The algorithm to be implemented within the game cycle, will be included in the conditional block (`if`):

1. Draw cards from the deck;
2. Show the score;
3. Calculate new score;
4. Check if the game is over.

In Python, the code that implements this block is as follows:

```python
# 1. retirar cartas do baralho
carta_jogador = random.randint(1,10)
carta_casa = random.randint(1,10)

# 2. mostrar jogada
print ("Tirou uma carta que vale", carta_jogador, "pontos.")
print ("A casa tirou uma carta que vale", carta_casa, "pontos.")

# 3. calcular pontuação
casa += carta_casa
jogador += carta_jogador

# 4. verificar se terminou o jogo
if jogador == 21:
    print ("21! Ganhou. Parabéns!")
    return
elif casa == 21:
    print ("21... Ganhou a casa...")
    return
elif casa > 21:
    print ("Ganhou! A casa passou os 21.")
    return
elif jogador > 21:
    print ("Perdeu... Passou os 21.")
    return
```

The cards are obtained through random values from 1 to 10.

In the second step of the algorithm, a new operator appears:

```python
casa += carta_casa
```

Equivalent to:

```python
casa = casa + carta_casa
```

At the end of the game loop, we have a multiple selection that determines whether any of the players won because they hit 21 or lost because they exceeded 21. For the program to end the game loop and exit the function, the instruction is used:

```python
return
```

After the game cycle, if none of the players has reached or exceeded 21 points, it is verified who won by having more points:

```python
if jogador >= casa:
    print ("Ganhou com", jogador, "contra", casa, "pontos da casa.")
else:
    print ("Perdeu com", jogador, "contra", casa, "pontos da casa.")
```

Try this game.

Just call the function `blackjack()`.

3   Final challenge

In this tutorial we simplify the game a little. Try now to incorporate the following game rule:

- "The house / dealer can only draw up to a maximum of 5 cards or until he reaches number 17"

That is, the number of moves of the computer and the player may be different!

Share your game!