

CODE CHALLENGE WORKED EXAMPLE: FRUIT MACHINE

For each challenge, solve it using:

- A flowchart
- Pseudocode (see A Level Pseudocode Guide <http://www.ocr.org.uk/Images/202654-pseudocode-guide.pdf>)
- Program code (any high level language will do).

The challenge: Fruit Machine

Write a program to simulate a Fruit Machine that displays three symbols at random from Cherry, Bell, Lemon, Orange, Star, Skull.

The player starts with £1 credit, with each go costing 20p.

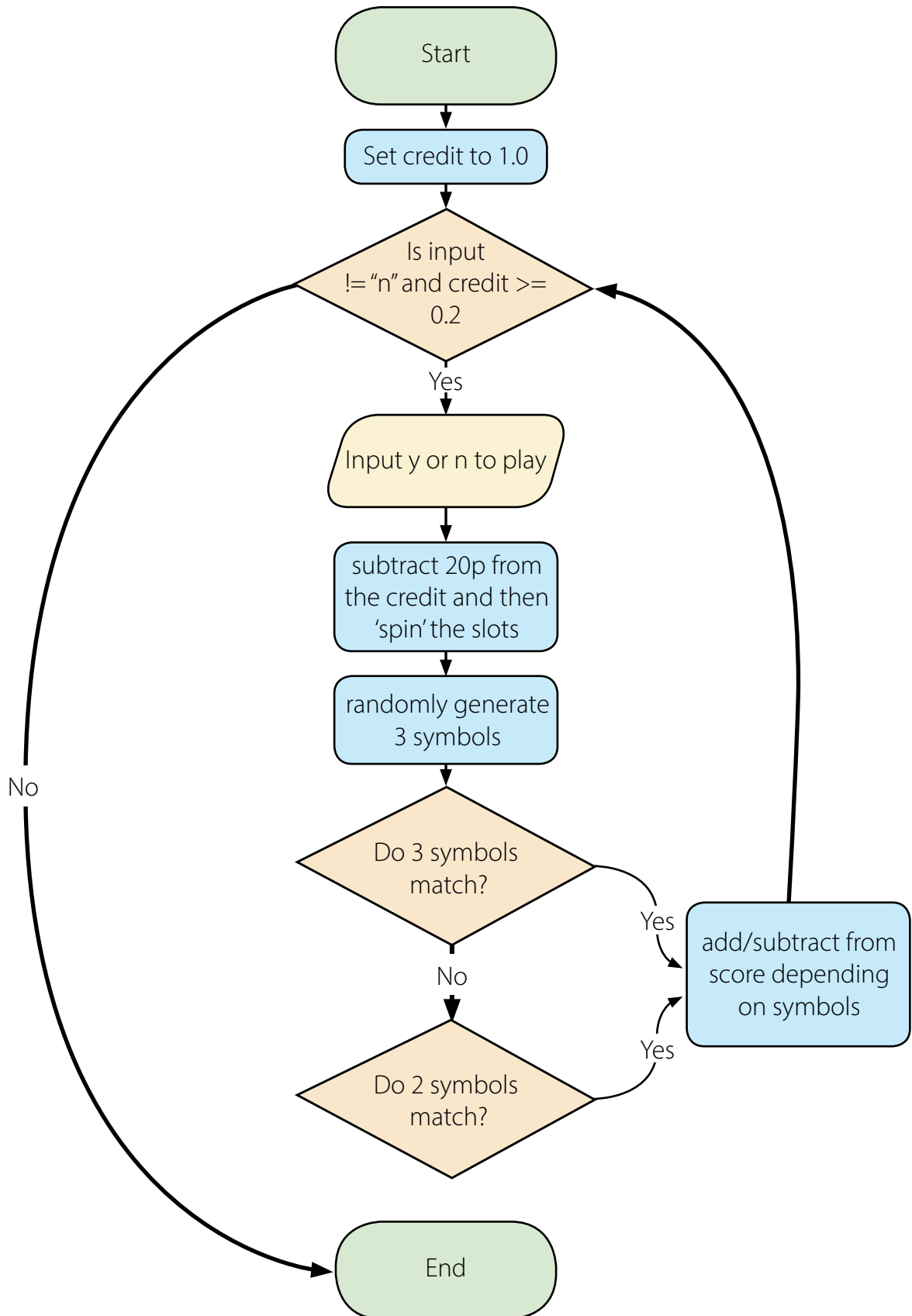
If the Fruit Machine “rolls” two of the same symbol, the user wins 50p. The player wins £1 for three of the same and £5 for three Bells. The player loses £1 if two skulls are rolled and all of his/her money if three skulls are rolled.

The player can choose to quit with the winnings after each roll or keep playing until there is no money left.

Useful Resources: choose <https://docs.python.org/3.3/tutorial/datastructures.html>



The flowchart:



Pseudocode:

Pseudocode	Explanation
<pre> symbols = ("Cherry","Bell","Lemon","Orange","Star","Skull") function main() credit = 1.0 usrInput = "" while usrInput != "n" AND credit >= 0.2 round(credit,2) usrInput = input("Would you like to play again? (y/n)") if usrInput == "y" then credit -= 0.2 credit += SpinSlots(credit) endif endwhile print("Goodbye. Thanks for playing") endfunction function SpinSlots(credit) winnings = 0.0 print("Spinning....") #start with blank list to store spins outcome = [] for i =0 to 2 #There are 6 symbols in the list number = random.randint(0,5) outcome.append(symbols[number]) outcome.sort() print(outcome) #3 of the same if all(x == outcome[0] for x in outcome) then if outcome[0] == "Bell" then #3 bells win 5 pounds winnings = 5.0 </pre>	<ol style="list-style-type: none"> <li data-bbox="1042 293 1485 353">1. We first create a tuple of all possible symbols in the fruit machine <li data-bbox="1042 376 1485 600">2. In the main function we set up the initial credit, and while the user still has enough credit to play and still wants to, we call the function 'SpinSlots', passing in the credit available, taking away 20p for each go. <li data-bbox="1042 1227 1485 1350">3. At the start of the SpinSlots function we set winnings equal to 0 and then randomly generate 3 symbols using the tuple we set up earlier. <li data-bbox="1042 1753 1485 1854">4. It is now a job of processing this list to see how much we win from this round.



```
elseif outcome[0] == "Skull" then
    #3 skulls lose all your money
    winnings = 0.0-credit
else
    #3 of any symbol win 1 pound
    winnings = 1.0
endif
else
    #2 of same symbol
    prev = None
    for item in outcome:
        if prev == item then
            if item == "Skull"
                #2 skulls lose a pound
                winnings = -1.0
            else:
                #2 of any symbol win 50p
                winnings = 0.5
        prev = item
    endif
    print("Earnings for this round: " +
str(round(winnings,2)))
    return winnings
endfunction
```

5. We return the winnings (whether negative or positive) and add this to the existing credit.



Program code (with comments):

```
symbols = ("Cherry", "Bell", "Lemon", "Orange", "Star", "Skull")
def main():
    credit = 1.0
    usrInput = ""
    while usrInput != "n" and credit >= 0.2:
        round(credit,2)
        usrInput = input("Would you like to play again? (y/n)")
        if usrInput == "y":
            credit -= 0.2
            credit += SpinSlots(credit)
    print("Goodbye. Thanks for playing")

def SpinSlots(credit):
    winnings = 0.0
    print("Spinning....")
    #start with blank list to store spins
    outcome = []
    for i in range(3):
        #There are 6 symbols in the list
        number = random.randint(0,5)
        outcome.append(symbols[number])
    outcome.sort()
    print(outcome)
    #3 of the same
    if all(x == outcome[0] for x in outcome):
        if outcome[0] == "Bell":
            #3 bells win 5 pounds
            winnings = 5.0
        elif outcome[0] == "Skull":
            #3 skulls lose all your money
            winnings = 0.0-credit
    else:
        #3 of any symbol win 1 pound
        winnings = 1.0
```



```
else:
    #2 of same symbol
    prev = None
    for item in outcome:
        if prev == item:
            if item == "Skull":
                #2 skulls lose a pound
                winnings = -1.0
            else:
                #2 of any symbol win 50p
                winnings = 0.5
        prev = item
print("Earnings for this round: " + str(round(winnings,2)))
return winnings
```



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