CODE CHALLENGE WORKED EXAMPLE: FRUIT MACHINE

For each challenge, solve it using:

- A flowchart
- 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:

1. Start
2. Set credit to 1.0
3. Is input != "n" and credit >= 0.2
   - Yes: Input y or n to play
     - Yes: randomly generate 3 symbols
     - No: subtract 20p from the credit and then 'spin' the slots
9. Do 3 symbols match?
   - Yes: add/subtract from score depending on symbols
   - No: Do 2 symbols match?
   - Yes: Input y or n to play
   - No: Is input != "n" and credit >= 0.2
4. End
Pseudocode:

```
Pseudocode
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
  return winnings
endfunction
```

Explanation

1. We first create a tuple of all possible symbols in the fruit machine.

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.

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.

4. It is now a job of processing this list to see how much we win from this round.
```python
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):

```python
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
    return winnings
```

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