PRM – Oct/Nov 2020 – P23

1 **(a) Programming concept 1**: Conditional Statements
Programming concept 2: Iteration

Note: These concepts can be written in any order.

Explanation:

- A post-conditional loop would run based on a flag
- At the end of the loop, the user is prompted whether or not to order another baguette, cancel, etc.
- Response stored in flag variable
- Conditional statement determines the response and switches the flag value accordingly

[3]

(b) Data structure: Array

The following is an example solution. There can be other correct solutions:

```
OUTPUT "Enter your choice [1-3]: "
INPUT breadChoice

IF breadChoice < 1 OR breadChoice > 3 THEN

        OUTPUT "Please enter a valid choice of bread [1-3]."
ELSE
        breadType[breadChoice] = breadType[breadChoice] + 1
END IF
```

[3]

(c) Problem: The most popular and least popular choices could be assigned to either of the fillings // The algorithm wouldn't be able to decide which filling is most popular and which is least popular.

Code:

The following is an example solution. There can be other correct solutions:

```
IF mostFillings = leastFillings THEN
        OUTPUT “The ” + mostilling[count] + “was ordered the same number of times as ” +
        leastFilling[count]”
ENDIF
```

[4]

(d) *The following is an example solution. There can be other correct solutions:*

```
moreOrder = TRUE
        changeOrder = TRUE

        WHILE moreOrder = TRUE
                WHILE changeOrder = TRUE
                        OUTPUT "Baguette sizes:"
                        OUTPUT "1. 15cm"
                        OUTPUT "2. 30cm"
                        sizeFlag = False

                        WHILE sizeFlag = False
                                OUTPUT "Enter your choice [1-2]: "
                                INPUT sizeChoice

                                IF sizeChoice < 1 OR sizeChoice > 2 THEN
                                        OUTPUT "Please enter a valid choice of size [1-2]."
                                ELSE
                                        baguetteSize[sizeChoice] = baguetteSize[sizeChoice] + 1
                                        sizeFlag = TRUE
                                END IF
                        END WHILE
```

```
// [Section start] Ask the user to input the type of bread


OUTPUT "Bread types:"
OUTPUT "1. White"
OUTPUT "2. Brown"
OUTPUT "3. Seeded"

// [Section end] Ask the user to input the type of bread



breadFlag = FALSE

WHILE breadFlag = FALSE
        OUTPUT "Enter your choice [1-3]: "
        INPUT breadChoice
        IF breadChoice < 1 OR breadChoice > 3 THEN
                OUTPUT "Please enter a valid choice of bread [1-3]."
        ELSE
                breadType[breadChoice] = breadType[breadChoice] + 1
                breadFlag = True
        END IF
END WHILE

OUTPUT "Baguette fillings:"
OUTPUT "1. Beef"
OUTPUT "2. Chicken"
OUTPUT "3. Cheese"
OUTPUT "4. Egg"
OUTPUT "5. Tuna"
OUTPUT "6. Turkey"

fillingFlag = FALSE

WHILE fillingFlag = FALSE
        OUTPUT "Enter your choice [1-6]: "
        INPUT fillingChoice

        // [Section start] Validate choice of filling
        IF fillingChoice < 1 OR fillingChoice > 6 THEN
                OUTPUT "Please enter a valid choice of filling [1-6]."
        // [Section start] Validate choice of filling
```

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```
        ELSE
            fillings[fillingChoice] = fillings[fillingChoice] + 1
            fillingFlag = TRUE
        END IF
    END WHILE

    saladCount = 0

    OUTPUT "Salad options:"
    OUTPUT "1. Lettuce"
    OUTPUT "2. Tomato"
    OUTPUT "3. Sweetcorn"
    OUTPUT "4. Cucumber"
    OUTPUT "5. Peppers"

    OUTPUT "Would you like to add salads to your baguette? (Y/N)"
    INPUT addSalad

    IF UPPER(addSalad) = "Y" THEN
        saladFlag = FALSE
        more = TRUE

        WHILE saladFlag = FALSE OR (saladCount < 3 AND more = TRUE)
            OUTPUT "You may choose up to" & (3 - saladCount) & " more salad(s). Enter your next choice [1-5]: "

            INPUT saladChoice

            IF saladChoice < 1 OR saladChoice > 5 THEN

                OUTPUT "Please enter a valid choice of salad [1-5]."

            ELSE

                salad[SaladChoice] = salad[SaladChoice] + 1
                saladFlag = TRUE
                saladCount = saladCount + 1
                saladChoiceList[saladCount] = saladChoice


                IF saladCount < 3 THEN
                    OUTPUT "Would you like to add another salad? (Y/N): "

                    INPUT more
                    IF UPPER(more) = "Y" THEN
                        more = TRUE
                    ELSE
                        more = FALSE
                    END IF
                END IF
            END IF
        END WHILE
    END IF


    sizeDisplay = baguetteSizeName[sizeChoice]
    bread = breadTypeName[breadChoice]
    filling = fillingsName[fillingChoice]

    OUTPUT "Your ordered baguette:"
    OUTPUT ""
    OUTPUT "Size:"
    OUTPUT sizeDisplay
    OUTPUT "Bread:"
    OUTPUT bread
    OUTPUT "Filling:"
    OUTPUT filling
    OUTPUT "Salad(s):"

    FOR saladCount = 1 TO 3
        IF saladChoiceList[saladCount] <> "" THEN
            OUTPUT saladName[saladChoiceList[saladCount]]
        END IF
    NEXT

    OUTPUT "Confirm order? (Y/N): "
    INPUT confirmOrder

    IF UPPER(confirmOrder) = "N" THEN
        confirmOrder = FALSE
        changeOrder = FALSE
        cancelOrder = FALSE

        WHILE changeOrder = FALSE AND cancelOrder = FALSE
            OUTPUT "Would you like to change your order or cancel it? (change/cancel): "
```

```
                INPUT changeOrderChoice
                IF UPPER(changeOrderChoice) = "CHANGE" THEN
                    changeOrder = TRUE
                ELSEIF UPPER(changeOrderChoice) = "CANCEL" THEN
                    cancelOrder = TRUE
                ELSE
                    OUTPUT "Please enter a valid choice: "
                END IF
            END WHILE

        ELSEIF UPPER(confirmOrder) = "Y" THEN
            changeOrder = FALSE
            cancelOrder = FALSE

            // [Section start] Calculate and display order number
            orderNo = orderNo + 1
            OUTPUT "Your order number is: " & orderNo
            // [Section start] Calculate and display order number
        END IF
    END WHILE

    OUTPUT "Would you like to order another baguette? (Y/N): "
    INPUT moreOrderChoice

    IF UPPER(moreOrderChoice) = "Y" THEN
        moreOrder = TRUE
    ELSE
        moreOrder = FALSE
    END IF
END WHILE
```

[6]

(e) and (f)

NOTE: ***(e)*** *and* ***(f)*** *have the same example solutions. There are other correct solutions to these questions individually.*

Pseudocode:

```
DECLARE totalSize15 : INTEGER
DECLARE totalSize30 : INTEGER

DECLARE totalBreadWhite : INTEGER
DECLARE totalBreadBrown : INTEGER
DECLARE totalBreadSeeded : INTEGER

DECLARE totalFillingBeef : INTEGER
DECLARE totalFillingChicken : INTEGER
DECLARE totalFillingCheese : INTEGER
DECLARE totalFillingEgg : INTEGER
DECLARE totalFillingTuna : INTEGER
DECLARE totalFillingTurkey : INTEGER

DECLARE totalBaguettesSold : INTEGER

totalBaguettesSold = orderNo

totalSize15 = baguetteSize[1]
totalSize30 = baguetteSize[2]

totalBreadWhite = breadType[1]
totalBreadBrown = breadType[2]
totalBreadSeeded = breadType[3]

totalFillingBeef = fillings[1]
totalFillingChicken = fillings[2]
totalFillingCheese = fillings[3]
totalFillingEgg = fillings[4]
totalFillingTuna = fillings[5]
totalFillingTurkey = fillings[6]

DECLARE mostFilling : INTEGER
DECLARE leastFilling : INTEGER
DECLARE mostPopularPerc : REAL
DECLARE leastPopularPerc : REAL
```

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```
DECLARE mostPopularName : STRING = ""
DECLARE leastPopularName : STRING = ""

mostFilling = -10000
leastFilling = 10000

FOR Count = 1 TO 6
    IF fillings[Count] > mostFilling THEN
        mostFilling = fillings[Count]
        mostPopularName = fillingsName[Count]
    ELSEIF fillings[Count] < leastFilling THEN
        leastFilling = fillings[Count]
        leastPopularName = fillingsName[Count]
    END IF
NEXT

mostPopularPerc = (mostFilling / orderNo) * 100
leastPopularPerc = (leastFilling / orderNo) * 100

OUTPUT ""
OUTPUT "The most popular baguette filling was " & mostPopularName & " with an order of " & mostPopularPerc & "%"
OUTPUT "The least popular baguette filling was " & leastPopularName & " with an order of " & leastPopularPerc & "%"
```

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Programming Language: VB

```
 Dim totalSize15 As Integer

Dim totalSize30 As Integer


Dim totalBreadWhite As Integer

Dim totalBreadBrown As Integer

Dim totalBreadSeeded As Integer

Dim totalFillingBeef As Integer

Dim totalFillingChicken As Integer
Dim totalFillingCheese As Integer

Dim totalFillingEgg As Integer

Dim totalFillingTuna As Integer

Dim totalFillingTurkey As Integer

Dim totalBaguettesSold As Integer

totalBaguettesSold = orderNo

totalSize15 = baguetteSize(1)

totalSize30 = baguetteSize(2)

totalBreadWhite = breadType(1)

totalBreadBrown = breadType(2)

totalBreadSeeded = breadType(3)

totalFillingBeef = fillings(1)

totalFillingChicken = fillings(2)

totalFillingCheese = fillings(3)

totalFillingEgg = fillings(4)

totalFillingTuna = fillings(5)

totalFillingTurkey = fillings(6)

Dim mostFilling As Integer

Dim leastFilling As Integer

Dim mostPopularPerc As Single

Dim leastPopularPerc As Single

Dim mostPopularName As String = ""

Dim leastPopularName As String = ""
```

```
        mostFilling = -10000

        leastFilling = 10000


        For count = 1 To 6

            If fillings(count) > mostFilling Then

                mostFilling = fillings(count)

                mostPopularName = fillingsName(count)

            ElseIf fillings(count) < leastFilling Then

                leastFilling = fillings(count)

                leastPopularName = fillingsName(count)

            End If

        Next

        mostPopularPerc = (mostFilling / orderNo) * 100

        leastPopularPerc = (leastFilling / orderNo) * 100

        Console.WriteLine("")

        Console.WriteLine("The most popular baguette filling was " & mostPopularName & " with an order of " & mostPopularPerc & "%")

        Console.WriteLine("The least popular baguette filling was " & leastPopularName & " with an order of " & leastPopularPerc & "%")
```

Programming Language: Python

```
 totalBaguettesSold = orderNo



totalSize15 = baguetteSize[0]
totalSize30 = baguetteSize[1]


totalBreadWhite = breadType[0]
totalBreadBrown = breadType[1]
totalBreadSeeded = breadType[2]


totalFillingBeef = fillings[0]
totalFillingChicken = fillings[1]
totalFillingCheese = fillings[2]
totalFillingEgg = fillings[3]
totalFillingTuna = fillings[4]
totalFillingTurkey = fillings[5]


mostFilling = -10000
leastFilling = 10000


for i in range(6):
    if fillings[i] > mostFilling:
        mostFilling = fillings[i]
        mostPopularName = fillingsName[i]
    elif fillings[i] < leastFilling:
        leastFilling = fillings[i]
        leastPopularName = fillingsName[i]


mostPopularPerc = (mostFilling / totalBaguettesSold) * 100
leastPopularPerc = (leastFilling / totalBaguettesSold) * 100


print("")
print("The most popular baguette filling was {} with an order of
{}%".format(mostPopularName, mostPopularPerc))
    print("The least popular baguette filling was {} with an order of
{}%".format(leastPopularName, leastPopularPerc))
```

*Additional answer for **(f)***

“The most popular baguette filling was tuna with an order of 40%”
“The least popular baguette filling was cheese/egg with an order of 0%”

e: [5]

f: [5]

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