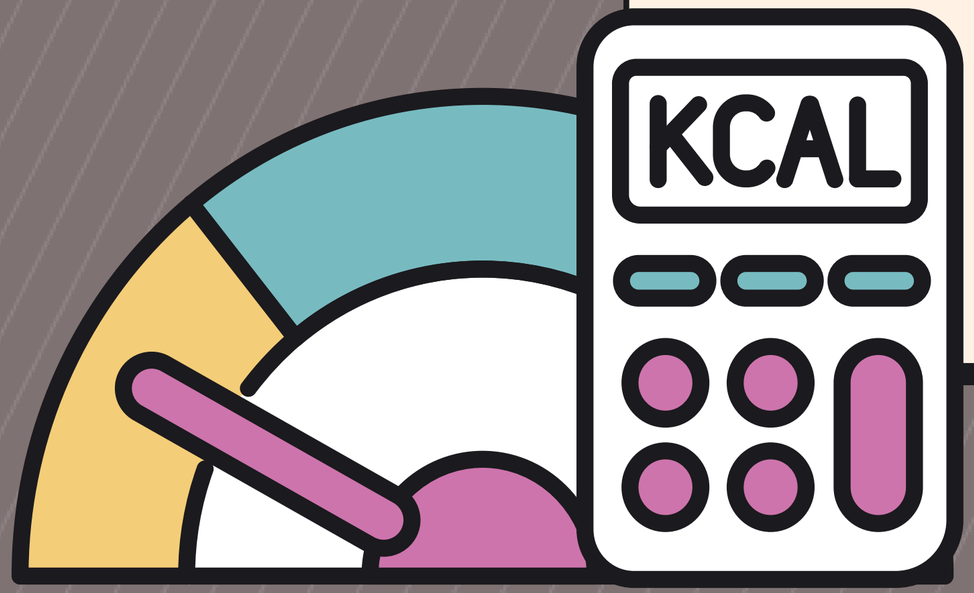
Nutrition Planner



Presented by Group 4

Meet Our Members

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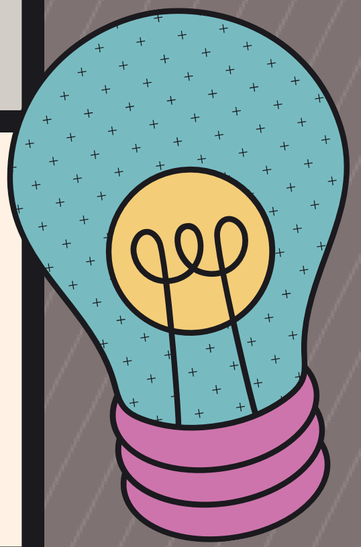
Background

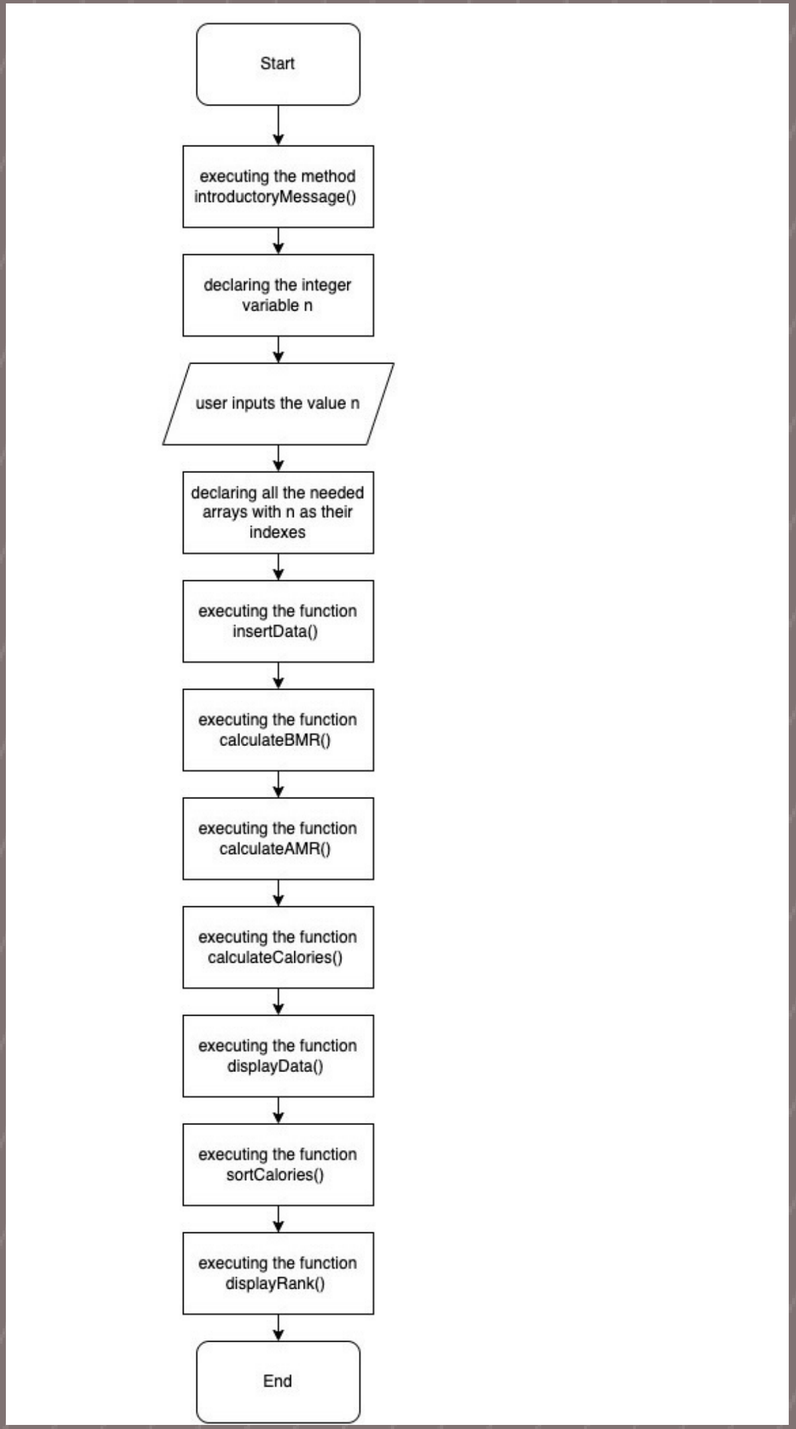
Meal planning is an easy step to help you reach your goals, whether you're trying to lose weight, or just improve your diet. Planning your own meals will allow you to see how much you are eating. This also prevents you from overeating at restaurants. Some of us settle for the closest fast food joint with unhealthy options. We made a diet plan program to help people count calories more efficiently.



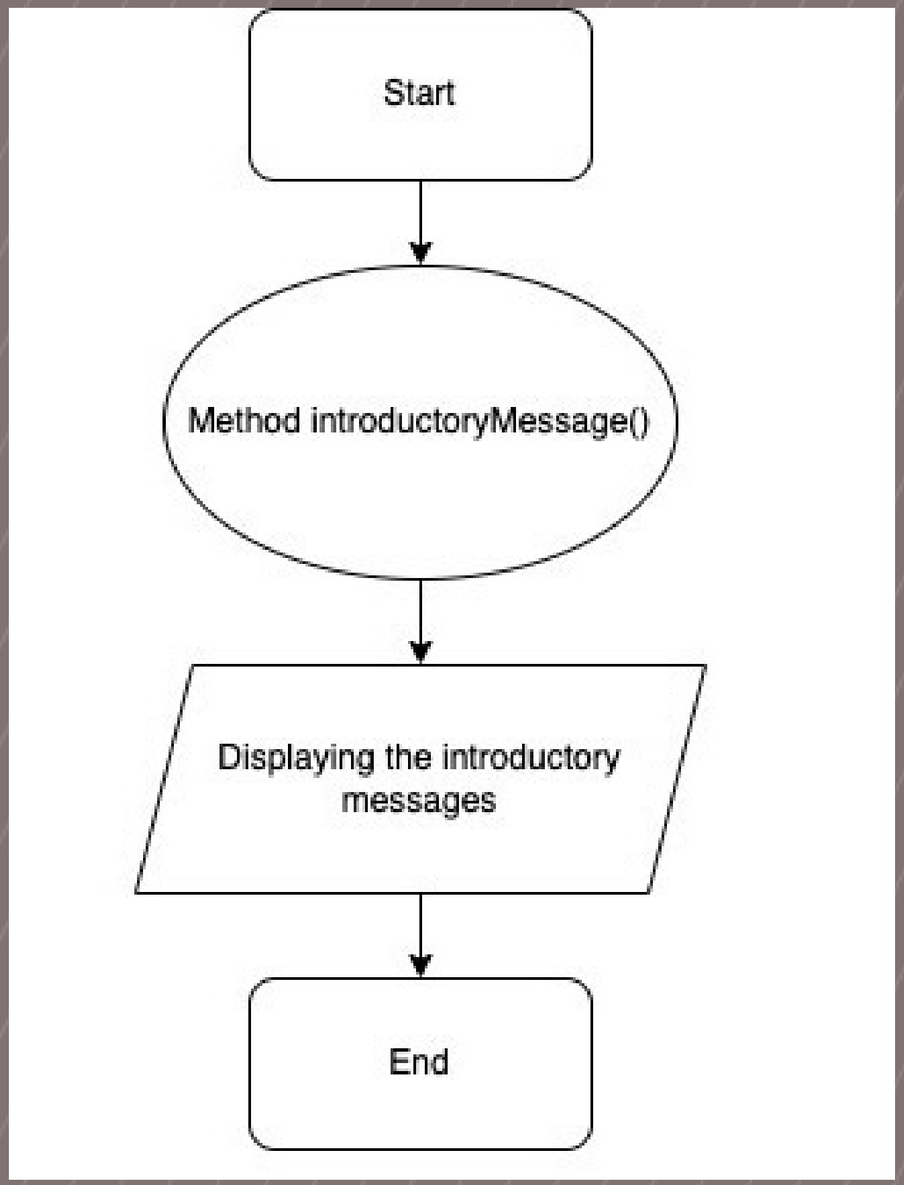
Problem Analysis and Basic Concept

To find out the amount of calories a person needs to consume, we need the Active Metabolic Rate (AMR) of the person. AMR is the number of calories a person burns in a day. Before calculating the AMR, we need to find out the person's daily activity score (sedentary, lightly active, moderately active, active, and very active). Every activity level has its own score. We also need to know the Basal Metabolic Rate (BMR) of a person. BMR is the number of calories a person burns as their body performs basic life sustaining functions. To calculate BMR, we need to know the persons sex, age, height, and weight. Calculating AMR is done by multiplying the BMR by the daily activity score of the person.

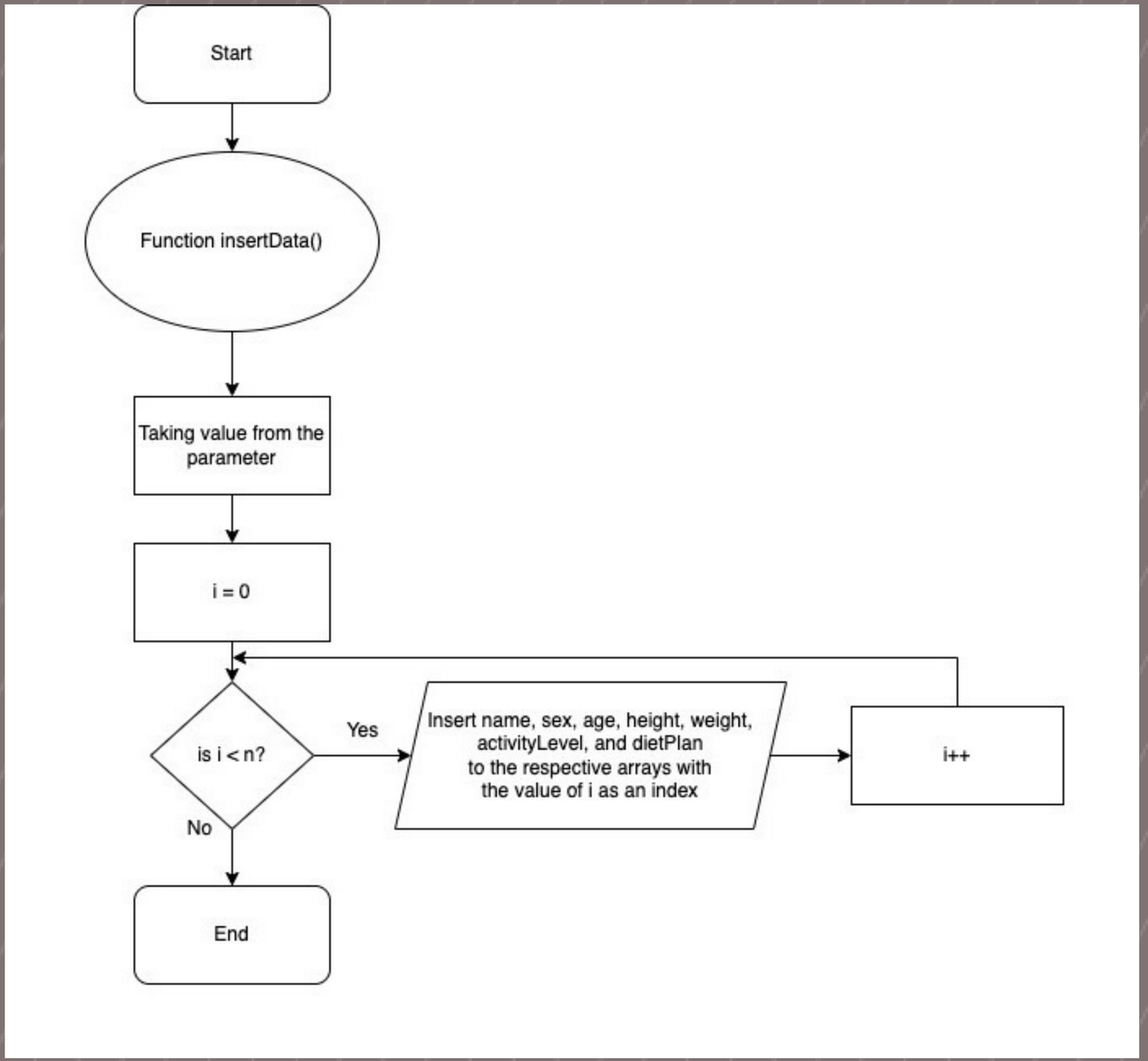
Flowchart


Start
executing the method introductoryMessage()
declaring the integer variable n
user inputs the value n
declaring all the needed arrays with n as their indexes
executing the function insertData()
executing the function calculateBMR()
executing the function calculateAMR()
executing the function calculateCalories()
executing the function displayData()
executing the function sortCalories()
executing the function displayRank()
End

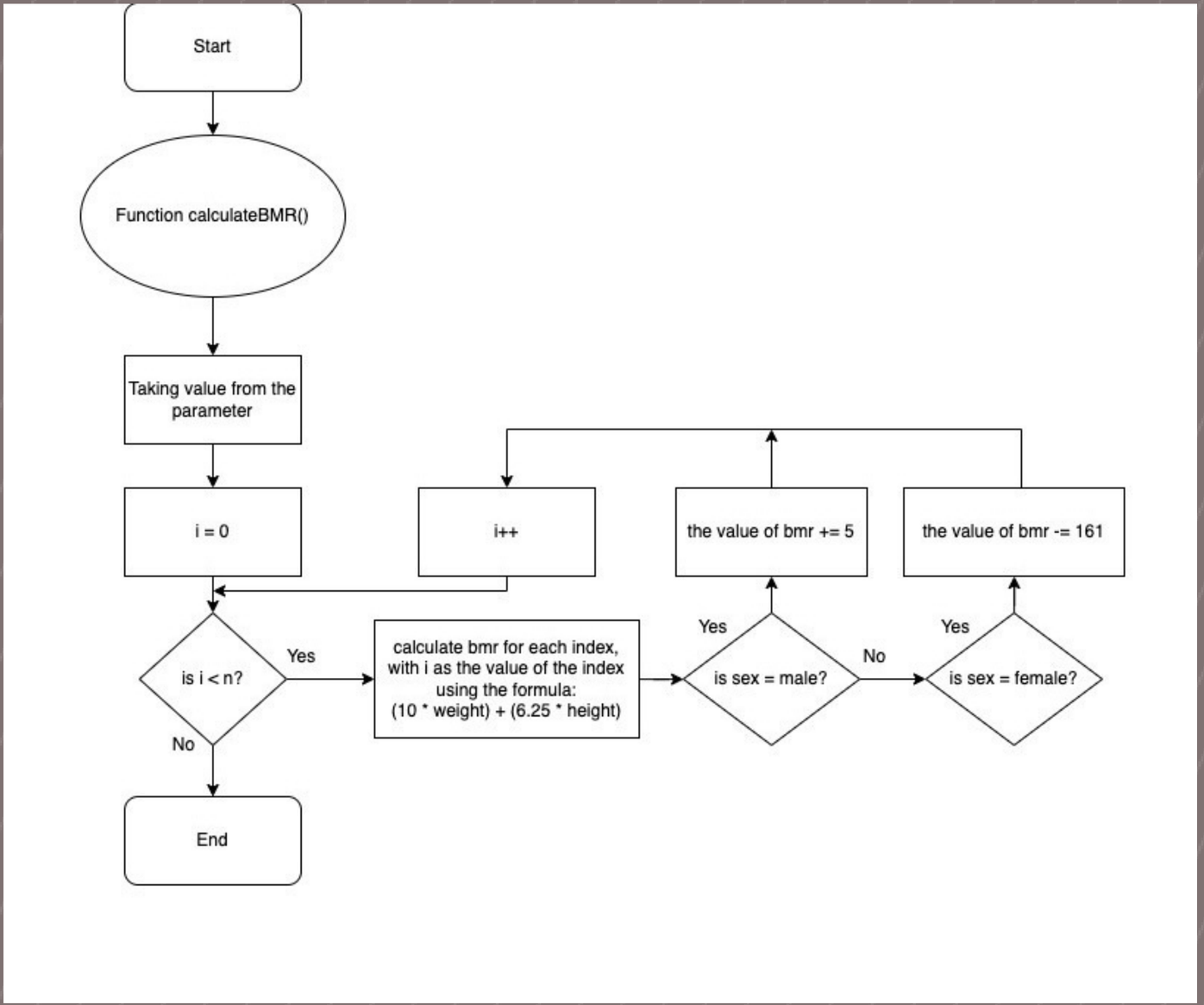
Flowchart


Start
Method introductoryMessage()
Displaying the introductory messages
End

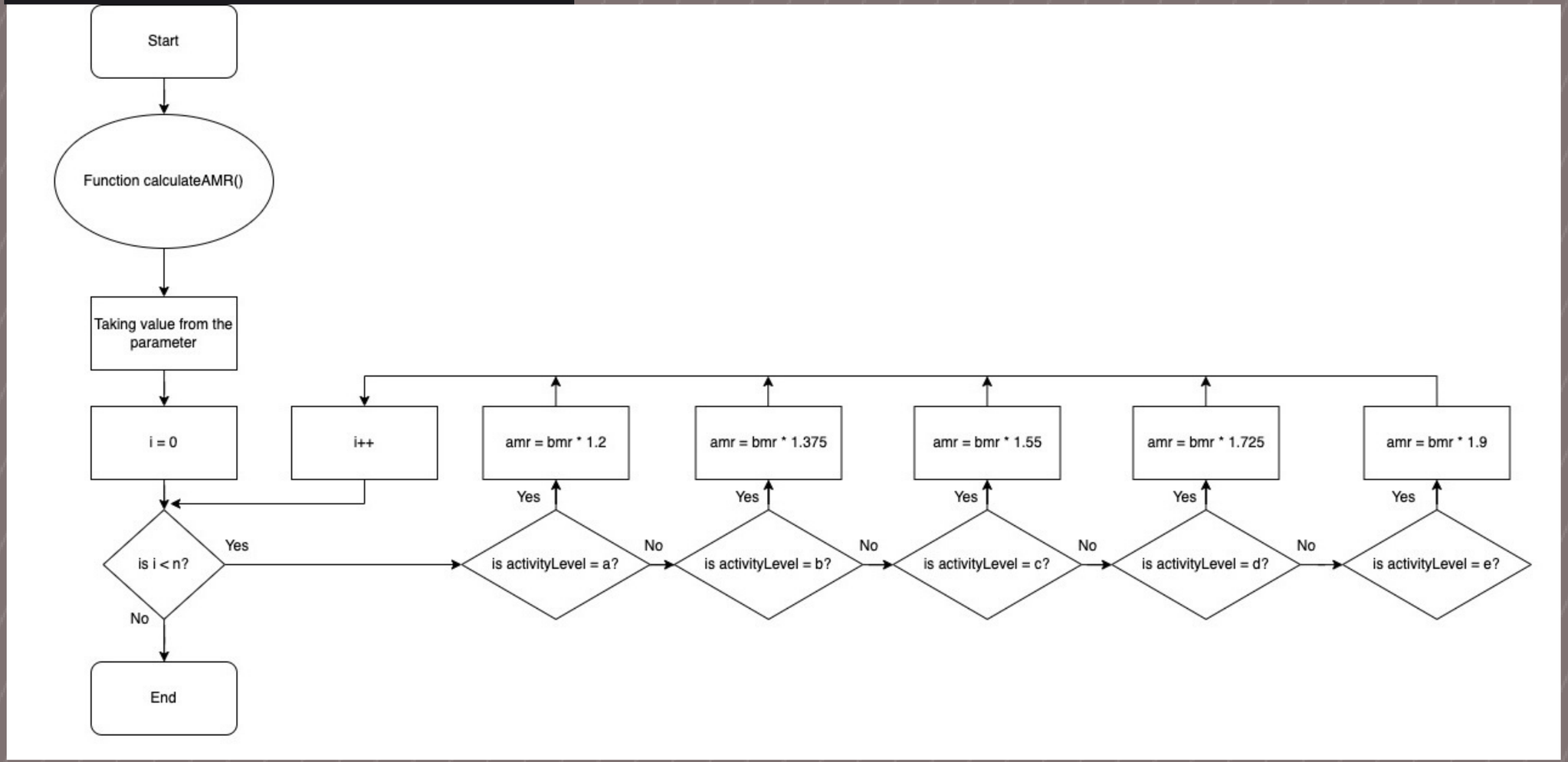
Flowchart


Start
Function insertData()
Taking value from the parameter
i = 0
is i < n?
Yes
Insert name, sex, age, height, weight, activityLevel, and dietPlan to the respective arrays with the value of i as an index
i++
No
End

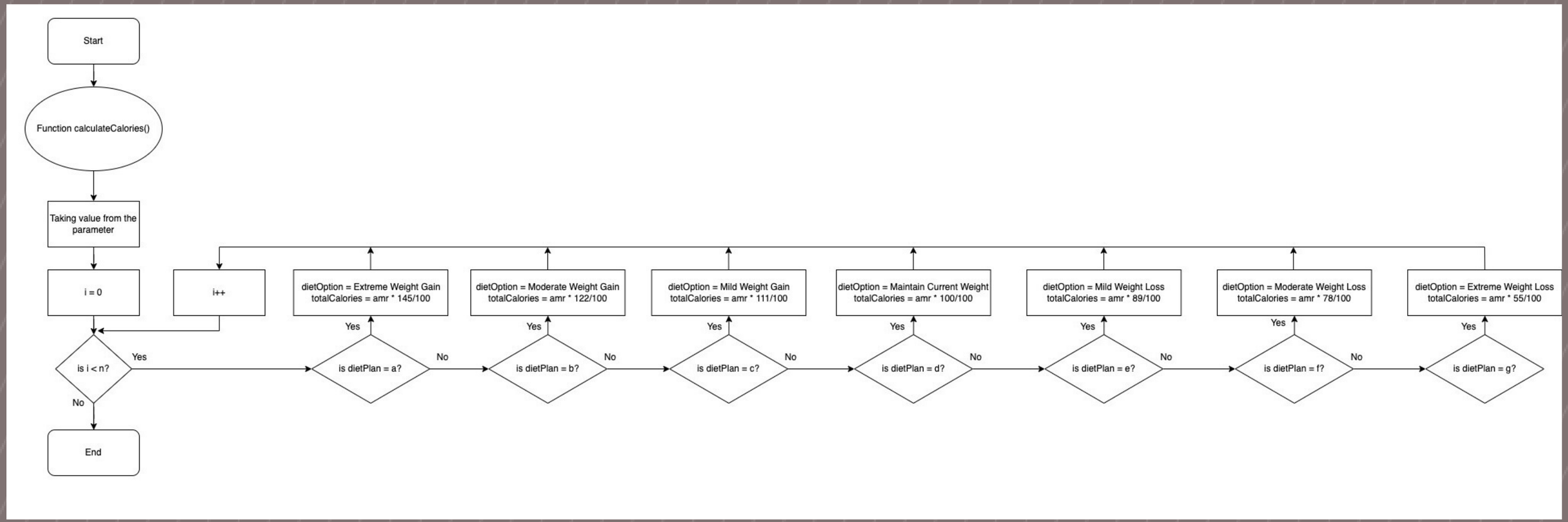
Flowchart


Start
Function calculateBMR()
Taking value from the parameter
i = 0
is i < n?
Yes
No
End
calculate bmr for each index, with i as the value of the index using the formula:
(10 * weight) + (6.25 * height)
is sex = male?
Yes
No
the value of bmr += 5
is sex = female?
Yes
the value of bmr -= 161
i++

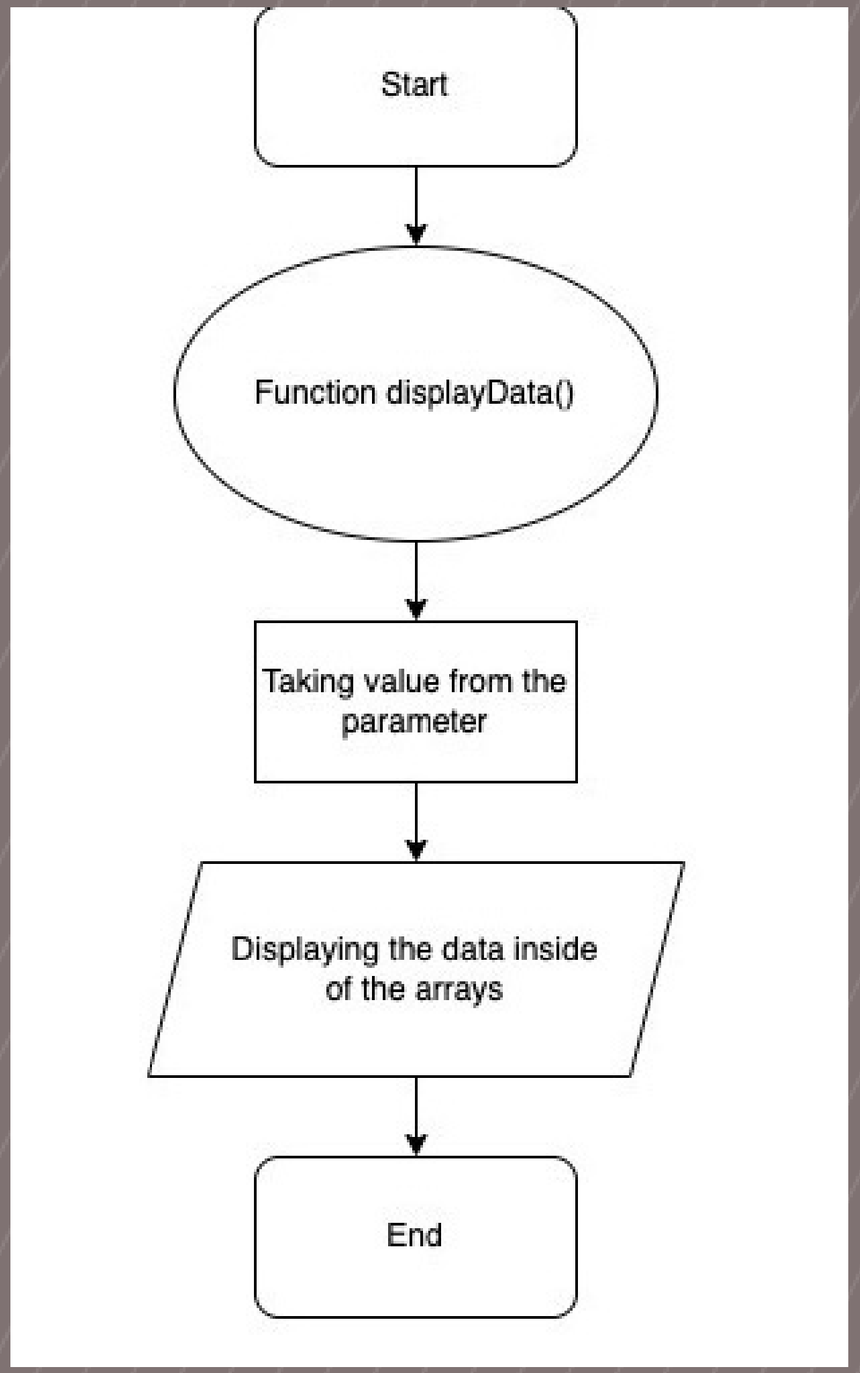
Flowchart


Start
Function calculateAMR()
Taking value from the parameter
i = 0
is i < n?
Yes
No
End
i++
is activityLevel = a?
amr = bmr * 1.2
Yes
No
is activityLevel = b?
amr = bmr * 1.375
Yes
No
is activityLevel = c?
amr = bmr * 1.55
Yes
No
is activityLevel = d?
amr = bmr * 1.725
Yes
No
is activityLevel = e?
amr = bmr * 1.9
Yes

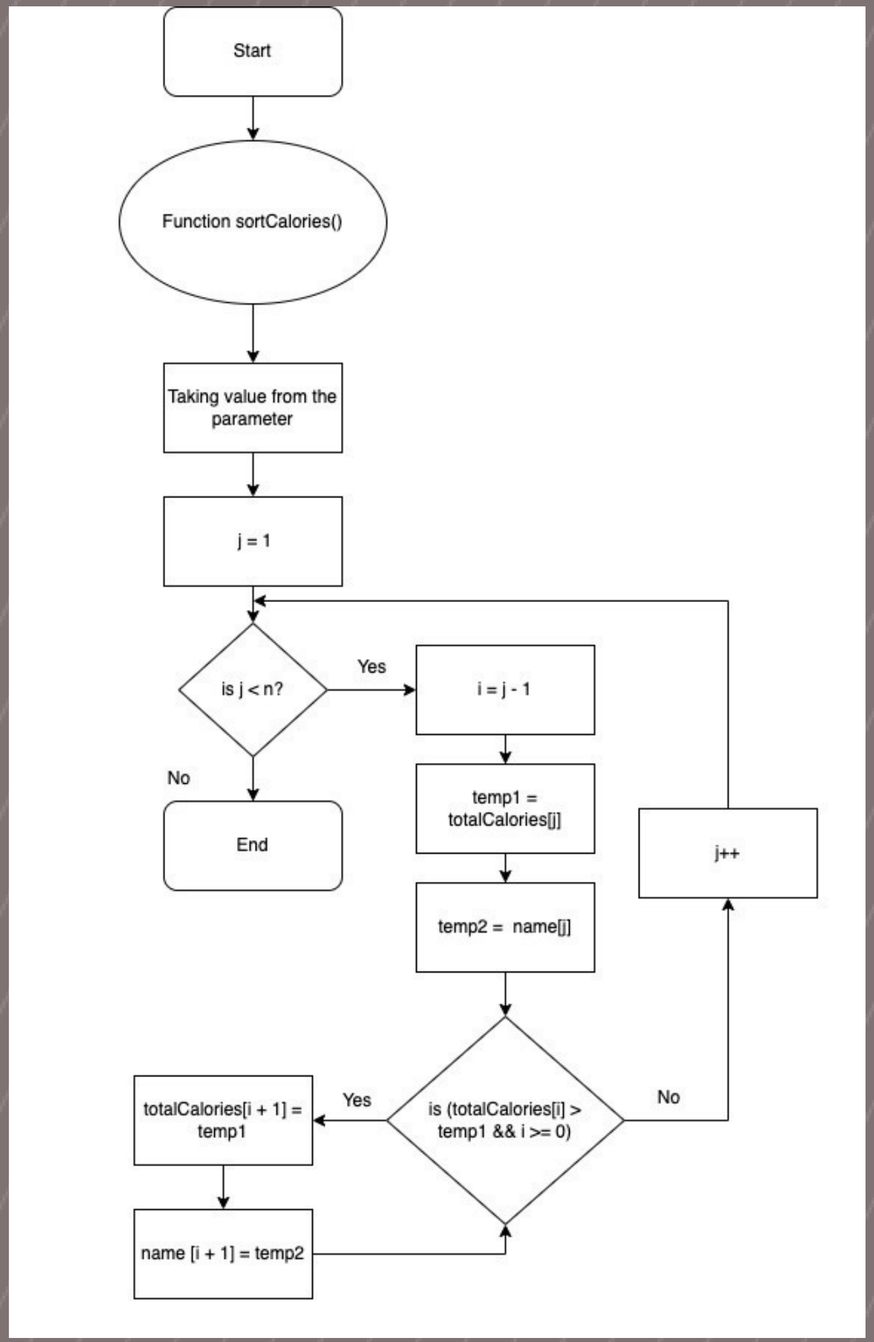
Flowchart


Start
Function calculateCalories()
Taking value from the parameter
i = 0
is i < n?
Yes
No
End
i++
dietOption = Extreme Weight Gain
totalCalories = amr * 145/100
is dietPlan = a?
dietOption = Moderate Weight Gain
totalCalories = amr * 122/100
is dietPlan = b?
dietOption = Mild Weight Gain
totalCalories = amr * 111/100
is dietPlan = c?
dietOption = Maintain Current Weight
totalCalories = amr * 100/100
is dietPlan = d?
dietOption = Mild Weight Loss
totalCalories = amr * 89/100
is dietPlan = e?
dietOption = Moderate Weight Loss
totalCalories = amr * 78/100
is dietPlan = f?
dietOption = Extreme Weight Loss
totalCalories = amr * 55/100
is dietPlan = g?

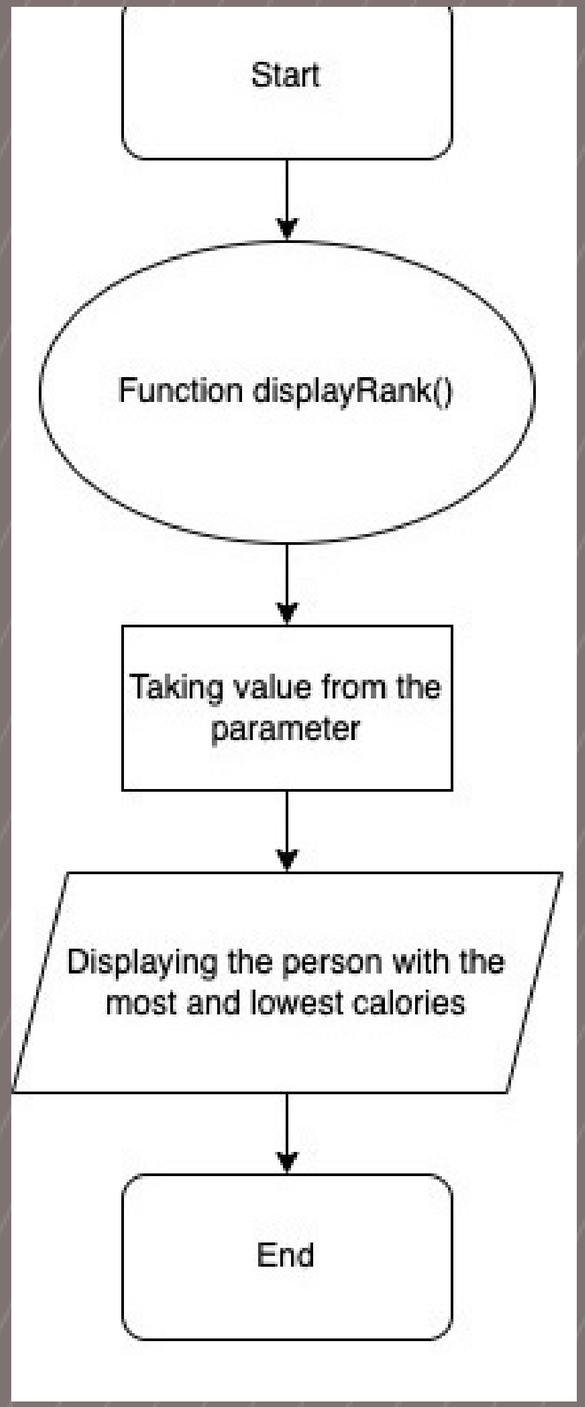
Flowchart


Start
Function displayData()
Taking value from the parameter
Displaying the data inside of the arrays
End

Flowchart


Start
Function sortCalories()
Taking value from the parameter
j = 1
is j < n?
Yes
No
End
i = j - 1
temp1 = totalCalories[j]
temp2 = name[j]
is (totalCalories[i] > temp1 && i >= 0)
Yes
No
totalCalories[i + 1] = temp1
name [i + 1] = temp2
j++

Flowchart


Start
Function displayRank()
Taking value from the parameter
Displaying the person with the most and lowest calories
End

Source code

```
#include <iostream>
using namespace std;

void introductoryMessage(){
    cout << "Welcome to Group 4's Nutrition Planner!";
    cout << "\n-----------------------------------------";
    cout << "\nHow many people would you like to calculate? ";
}

void insertData (string name[], string sex[], double age[], double height[],
                 double weight[], char activityLevel[], char dietPlan[], int n){
    for (int i=0; i<n; i++){
        cout << "\nInsert your name! ";
        cin >> name[i];
        cout << "\nInsert your sex! ";
        cin >> sex[i];
        cout << "\nInsert your age! ";
        cin >> age[i];
        cout << "\nInsert your height! (in cm)";
        cin >> height[i];
        cout << "\nInsert your weight! (in kg)";
        cin >> weight[i];

```

Source code

```
24          cout << endl << "Choose your activity level!" << endl
25               << "a). Sedentary (little to no exercise)" << endl
26               << "b). Lightly active (1-3 exercises/week)" << endl
27               << "c). Moderately active (3-5 exercises/week)" << endl
28               << "d). Active (6-7 exercises/week)" << endl
29               << "e). Very active (6-7 days hard exercises/week)" << endl;
30          cin >> activityLevel[i];
31
32          cout << endl << "Choose your diet plan!" << endl
33               << "a). Extreme weight gain" << endl
34               << "b). Moderate weight gain" << endl
35               << "c). Mild weight gain" << endl
36               << "d). Maintain current weight" << endl
37               << "e). Mild weight loss" << endl
38               << "f). Moderate weight loss" << endl
39               << "g). Extreme weight loss" << endl;
40          cin >> dietPlan[i];
41
42      }
43  }
```

Source code

```
45 void calculateBMR(string sex[], double age[], double height[], double weight[], double bmr[], int n){
46     for (int i=0; i<n; i++){
47         bmr[i] = (10 * weight[i]) + (6.25 * height[i]) - (5 * age[i]);
48         if(sex[i] == "male"){
49             bmr[i] += 5;
50         } else if (sex[i] == "female"){
51             bmr[i] -= 161;
52         }
53     }
54 }
55
```

Source code

```
56 void calculateAMR(double bmr[], char activityLevel[], double amr[], int n){
57     for (int i=0; i<n; i++){
58         switch (activityLevel[i]) {
59             case 'a':
60                 amr[i] = bmr[i] * 1.2;
61                 break;
62             case 'b':
63                 amr[i] = bmr[i] * 1.375;
64                 break;
65             case 'c':
66                 amr[i] = bmr[i] * 1.55;
67                 break;
68             case 'd':
69                 amr[i] = bmr[i] * 1.725;
70                 break;
71             case 'e':
72                 amr[i] = bmr[i] * 1.9;
73                 break;
74         }
75     }
76 }
```

Source code

```
78  void calculateCalories(double amr[], char dietPlan[], string dietOption[], double totalCalories[], int n){
79      for (int i=0; i<n; i++){
80          switch (dietPlan[i]) {
81              case 'a':
82                  dietOption[i] = "Extreme weight gain";
83                  totalCalories[i] = amr[i] * 145/100;
84                  break;
85              case 'b':
86                  dietOption[i] = "Moderate weight gain";
87                  totalCalories[i] = amr[i] * 122/100;
88                  break;
89              case 'c':
90                  dietOption[i] = "Mild weight gain";
91                  totalCalories[i] = amr[i] * 111/100;
92                  break;
93              case 'd':
94                  dietOption[i] = "Maintain current weight";
95                  totalCalories[i] = amr[i] * 100/100;
96                  break;
97              case 'e':
98                  dietOption[i] = "Mild weight loss";
99                  totalCalories[i] = amr[i] * 89/100;
100                 break;
101             case 'f':
102                 dietOption[i] = "Moderate weight loss";
103                 totalCalories[i] = amr[i] * 78/100;
104                 break;
105             case 'g':
106                 dietOption[i] = "Extreme weight loss";
107                 totalCalories[i] = amr[i] * 55/100;
108                 break;
109         }
110     }
```

Source code

```
111 }
112
113 void displayData(string name[], string sex[], double height[], double weight[],
114                  string dietOption[], double totalCalories[], int n){
115     for (int i=0; i<n; i++){
116         cout << endl << "-----------------------------------------------" << endl
117              << "Name: " << name[i] << endl
118              << "Sex: " << sex[i] << endl
119              << "Height: " << height[i] << "cm" << endl
120              << "Weight: " << weight[i] << "kg" << endl
121              << "Your preferred diet plan: " << dietOption[i] << endl
122              << "Calories needed: " << totalCalories[i] << "kkal" << endl;
123     }
124 }
```

Source code

```
126 void sortCalories(string name[], double totalCalories[], int n){
127     for(int j=1; j<n; j++){
128         int i = j - 1;
129         double temp1 = totalCalories[j];
130         string temp2 = name[j];
131         while(totalCalories[i] > temp1 && i>=0){
132             totalCalories[i + 1] = temp1;
133             name[i + 1] = temp2;
134         }
135     }
136 
137 }
```

Source code

```
139 void displayRank(string name[], double totalCalories[], int n){
140 
141     cout << endl << "The person with the most calory need is: " << name[n - 1] <<
142     " with the calory need of " << totalCalories[n - 1] << "kkal" << endl
143     << "The person with the lowest calory need is: " << name[0] << " with the calory need of "
144     << totalCalories[0] << "kkal" << endl;
145 }
146 
```

Source code

```
147 int main()
148 {
149     introductoryMessage();
150 
151     int n;
152     cin >> n;
153     cout << endl;
154 
155     string name[n];
156     string sex[n];
157     double age[n];
158     double height[n];
159     double weight[n];
160     double bmr[n];
161     char activityLevel[n];
162     double amr[n];
163     char dietPlan[n];
164     string dietOption[n];
165     double totalCalories[n];
166 
167     insertData(name, sex, age, height, weight, activityLevel, dietPlan, n);
168     calculateBMR(sex, age, height, weight, bmr, n);
169     calculateAMR(bmr, activityLevel, amr, n);
170     calculateCalories(amr, dietPlan, dietOption, totalCalories, n);
171     displayData(name, sex, height, weight, dietOption, totalCalories, n);
172     sortCalories(name, totalCalories, n);
173     displayRank(name, totalCalories, n);
174 
175 }
```

Output

```
Welcome to Group 4's Nutrition Planner!
-----------------------------------------------
How many people would you like to calculate? 2


Insert your name! khali

Insert your sex! female

Insert your age! 18

Insert your height! (in cm)162

Insert your weight! (in kg)55

Choose your activity level!
a). Sedentary (little to no exercise)
b). Lightly active (1-3 exercises/week)
c). Moderately active (3-5 exercises/week)
d). Active (6-7 exercises/week)
e). Very active (6-7 days hard exercises/week)
a

Choose your diet plan!
a). Extreme weight gain
b). Moderate weight gain
c). Mild weight gain
d). Maintain current weight
e). Mild weight loss
f). Moderate weight loss
g). Extreme weight loss
d
```

```
Insert your name! kania

Insert your sex! female

Insert your age! 19

Insert your height! (in cm)150

Insert your weight! (in kg)40

Choose your activity level!
a). Sedentary (little to no exercise)
b). Lightly active (1-3 exercises/week)
c). Moderately active (3-5 exercises/week)
d). Active (6-7 exercises/week)
e). Very active (6-7 days hard exercises/week)
b

Choose your diet plan!
a). Extreme weight gain
b). Moderate weight gain
c). Mild weight gain
d). Maintain current weight
e). Mild weight loss
f). Moderate weight loss
g). Extreme weight loss
c
```

Output

```
--------------------------------------------------
Name: khali
Sex: female
Height: 162cm
Weight: 55kg
Your preferred diet plan: Maintain current weight
Calories needed: 1573.8kkal

--------------------------------------------------
Name: kania
Sex: female
Height: 150cm
Weight: 40kg
Your preferred diet plan: Mild weight gain
Calories needed: 1650.64kkal

The person with the most calory need is: kania with the calory need of 1650.64kkal
The person with the lowest calory need is: khali with the calory need of 1573.8kkal
```

감사합니다

Thank You