

In Part II, you will extend and improve every aspect of the system described in Part 1 and provide a report describing your work. All your code will be included as an appendix (attached to the back of your report).

Extend your Part 1 project report to 6 – 8 pages single spaced (excluding the appendix containing the Java code). Your report must describe:

- the features that you have included and how these features relate to the features that you have found in different sources.
- should include samples of the code that you have written in your program with explanations.

In writing your program, you must show off your knowledge of Java.

- Use as many coding features as you can (arrays, functions with different return types, while and for loops) – we want to see what you know.
- The program must be written in the best style that you can produce and contain meaningful comments and the variable names must be well chosen.

#### **Other Points:**

- Be creative. Be sure to highlight any features that you have included in your report that you invented yourself or that you did not actually find on the Web.
- Your report must contain (you can use the template provided – with headings):
  - A short introduction
  - Build on your project Part 1 report (e.g., show how you incorporated the features in your program and made it game like)
  - Describe the different programming features/components (e.g., arrays, methods, etc.). that you included in your code (with code snippets)
  - Any features that you invented yourself
  - A clear description of how the work was shared with your partners (who did what).
  - References giving all your sources (including new ones from Part I)
  - Outputs showing what your program produces for several cases.
  - A conclusion saying what you have learned
  - A neatly formatted and commented complete copy of the program as an appendix.
- Your report must NOT contain any unacknowledged work copied or copied and pasted from anywhere or anyone.
- Make sure even if you included a very simple program in your report Part I that you add more to it. For example, a simple program with just adding and subtraction will not get top marks.
- This should be more than a lab question or even an assignment question. We want to see how you incorporate as much from this course as you can.

#### **Deliverables (demo and printed copy of report due **Tuesday Nov. 28<sup>th</sup>**)**

- A team demo of your program (Tuesday Nov. 28<sup>th</sup> during lab times)
- Your final report (with your code/program added as an appendix). This is to be **printed and you need to hand it in before you demo your program.**


**Team Name:**

Name	Banner ID	Section (1 or 2)

**Project Topic:** Basic science topics for elementary students (Grades 1-4)

**Project Title:** Health Elevator

**Due Date:** **Tuesday November, 2017** (Your report must be printed out and handed in before your Project Demo)

Declaration: Please complete this declaration		
1	This document is entirely our teams own work (and has not been used for any other academic purposes).	Yes
2	We obtained help to complete this document.	Yes. 
3	This document contains some material copied or cut and pasted from the internet or another document or file or program. These sources have all been properly cited.	No

## **Introduction**

This 'health elevator' app is an easy to play game for the children so that they can learn more about different foods and their calorie contents. Its intentionally designed in a simple way and with attractive attributes to create enthusiasm in children.

## **Program Features and Game-like Features (how did you incorporate)**

We had 3 sections and we divided the sections among us. We have put score system and to calculate the earned points of the users. These 3 sections are completely unique and provide completely new and different experiences. Levels, scorecards, selection, advice at the end of the game are all parts of our app.

## **Programming features/components (e.g., arrays, methods, etc.) in code and Code Snippets**

Array  
Comparison between arrays  
String, char, other primitive datatypes  
While loop  
If statements  
For loop, etc

## **Features that you invented yourself (may not be applicable)**

1<sup>st</sup> section: Categorization  
2<sup>nd</sup> section: Quiz  
3<sup>rd</sup> section: Diet plan

## **Description of how the work was shared with your partners (who did what)**

1<sup>st</sup> section: Yijie Wang  
2<sup>nd</sup> section: Sourav Das  
3<sup>rd</sup> section: Sourav Das and Yijie Wang

## **Test Cases (output)**

```

----jGRASP exec: java Game
Welcome Kids!!This is your favorite game"Health Elevator".
Today we will have some fun and will be learning about different foods.
Get ready!!
Food:
1.apple 2.eggplant 3.avocado 4.rice 5.bell pepper 6.gummybear 7.brownie 8.kale 9.tofu 10.cheese
11.coke 12.scallion 13.oatmeal 14.french fries 15.cherry 16.bean 17.carrot 18.juice 19.cabbage 20.egg
21.broccoli 22.shrimp 23.radish 24.peanut 25.chip 26.sesame 27.spinach 28.corn 29.eggroll 30.lettuce
31.olives 32.beef 33.cream 34.walnut 35.milk 36.tuna 37.bagel 38.butter 39.pork 40.chicken

You need to categorize these food into four categories.

Sugar:(Hint)You have to put the number of the food items here:You need to type 'Q/q' to quit:
>> 1
>> 2
>> 3
>> 4
>> 5
>> 6
>> 7
>> 8
>> 9
>> 10
You made 6 mistakes.

Fat:(Hint)You have to put 10 items here:
>> 1
>> 2
>> 3
>> 4
>> 5
>> 6
>> 7
>> 8
>> 9
>> 10
You made 9 mistakes.

Protein:(Hint)You have to put 10 items here:
>> 1
>> 2
>> 3
>> 4
>> 5
>> 6
>> 7
>> 8
>> 9
>> 10
You made 8 mistakes.

Vegetables:(Hint)You have to put 10 items here:
>> 1
>> 2
>> 3
>> 3
>> 4
>> 5
>> 6
>> 7
>> 8
>> 9
You made 10 mistakes.
The right answer is:
Sugar: 1 4 6 7 11 13 18 28 37 15
Fat: 3 14 24 25 26 29 33 38 31 39

```

```

Vegetables:2 5 8 12 17 19 21 23 27 30
You made 33mistakes in total.
You can have 7 points
There will be two levels in this section of game:Beginner and Expert.
In the beginner level, you will need to answer the calorie content of a food from 3 options.
In the expert level,you will need to answer the calorie content of a food from your memory,no options or any other que
Are you a beginner?
>> Select Y/y for yes or N/n for no:n
Welcome to the expert level!
Practice makes a man perfect!
You will get 5 questions.
What is the ideal calorie content for breakfast?
>> 100
100 is not in the correct range.The correct answer is 700-800 calories
What is the ideal calorie content for lunch?
>> 55
55 is not in the correct range.The correct answer is 500-600 calories
What is the ideal calorie content for dinner?
>> 55
55 is not in the correct range.The correct answer is 300-400 calories
Should you take a heavy meal before sleep?Answer yes or no
>> yes
Your answer is incorrect.You should never take a heavy meal before sleep.
What is the calorie content of a coconut?
>> 100
100 is not in the correct range.The correct range is 300-400.
Congratulations!You have mastered the expert level.Your score is 0
apple    avocado    rice    brownie    tofu    cheeseburger    coke    chips    bagel
oatmeal  frenchfries  carrot  juice    cabbage  egg    broccoli  shrimp  pork
spinach  corn        eggroll  lettuce  steak   icecream  walnut   milk    tuna    chicken
Type the items you would like to have in breakfast:Type 'done' if you have completed selection:
>> apple avocado done
Your total calorie in breakfast:210
Type the items you would like to have in lunch:Type 'done' if you have completed selection:
>> apple avocado done
Your total calorie in lunch:210
Type the items you would like to have in dinner:Type 'done' if you have completed selection:
>> apple avocado egg done
Your total calorie in dinner:280

Your total calorie in day:700
You need to take more calorie.Its less than the ideal

----jGRASP: operation complete.

----jGRASP exec: java Game
Welcome Kids!!This is your favorite game"Health Elevator".
Today we will have some fun and will be learning about different foods.
Get ready!!
Food:
1.apple 2.eggplant 3.avocado 4.rice 5.bell pepper 6.gummybear 7.brownie 8.kale 9.tofu 10.cheese
11.coke 12.scallion 13.oatmeal 14.french fries 15.cherry 16.bean 17.carrot 18.juice 19.cabbage 20.egg
21.broccoli 22.shrimp 23.radish 24.peanut 25.chip 26.sesame 27.spinach 28.corn 29.eggroll 30.lettuce
31.olives 32.beef 33.cream 34.walnut 35.milk 36.tuna 37.bagel 38.butter 39.pork 40.chicken

You need to categorize these food into four categories.

Sugar:(Hint)You have to put the number of the food items here:You need to type 'Q/q' to quit:
>> L

```

## Conclusion

We believe this game can enrich the existing knowledge of the children. This will help them to learn through fun and they will be able to form a good diet habit. They will know about different food and the benefits of a healthy living style.

## References (all from Part I and any new ones from them)

## Appendix – Program Code – must be formatted and commented

/\*Health Elevator

Sourav Das and Yijie Wang

A program to teach the children about different foods and their calorie contents

\*/

```
import java.util.Scanner;
public class Game{
    //This method contains the whole game
    public static void main(String[]args){
        Scanner kb=new Scanner(System.in);
        char stage;
        int expert=0,point=0,point1=0;
        char bans1;
        int bans2;
        String answer;
        String permission="",permission1="";
        int count=0,mistake1=0,mistake2=0,mistake3=0,mistake4=0;

        System.out.println("Welcome Kids!!This is your favorite
game\"Health Elevator\".\nToday we will have some fun and will be
learning about different foods.\nGet ready!!" );
        System.out.println("Food: \n1.apple 2.eggplant 3.avocado
4.rice 5.bell pepper 6.gummybear 7.brownie 8.kale 9.tofu
10.cheese\n11.coke 12.scallion 13.oatmeal 14.french fries 15.cherry
16.bean 17.carrot 18.juice 19.cabbage 20.egg\n21.broccoli 22.shrimp
23.radish 24.peanut 25.chip 26.sesame 27.spinach 28.corn 29.eggroll
30.lettuce\n31.olives 32.beef 33.cream 34.walnut 35.milk 36.tuna
37.bagel 38.butter 39.pork 40.chicken");
        int[] sugar =new int[40];//int an array with the number of
10

        System.out.println("\nYou need to categorize these food
into four categories.");
        System.out.println("\nSugar: (Hint) You have to put the
number of the food items here: You need to type 'Q/q' to quit:");
```

```

    for(int i=0;i<10;i++){
        sugar[i]=kb.nextInt();
        if(sugar[i]==1||sugar[i]==4||sugar[i]==6||sugar[i]==7||s
ugar[i]==11||sugar[i]==13||sugar[i]==18||sugar[i]==28||sugar[i]==37|
|sugar[i]==15){
            count++;}
        else{
            mistake1++;}
    }
    System.out.println("You made "+mistake1+" mistakes.");

    int[] fat =new int [10];
    System.out.println("\nFat:(Hint)You have to put 10 items
here: ");
    for(int j=0;j<10;j++){
        fat[j]=kb.nextInt();}
    for(int i=0;i<10;i++){
        if(fat[i]==3||fat[i]==14||fat[i]==24||fat[i]==25||fat[i]
==26||fat[i]==29||fat[i]==33||fat[i]==38||fat[i]==31||fat[i]==34){
            count++;}
        else{
            mistake2++;
        }
    }
    System.out.println("You made "+mistake2+" mistakes.");

    int[] protein =new int [10];
    System.out.println("\nProtein:(Hint)You have to put 10
items here: ");
    for(int j=0;j<10;j++){
        protein[j]=kb.nextInt();}
    for(int i=0;i<10;i++){
        if(protein[i]==9||protein[i]==10||protein[i]==40||protei
n[i]==35||protein[i]==22||protein[i]==20||protein[i]==16||protein[i]
==36||protein[i]==39||protein[i]==321){
            count++;}
        else{
            mistake3++;
        }
    }
    System.out.println("You made "+mistake3+" mistakes.");
    int[] veg =new int [10];
    System.out.println("\nVegetables:(Hint)You have to put 10
items here: ");
    for(int j=0;j<10;j++){

```

```

    protein[j]=kb.nextInt();}
    for(int i=0;i<10;i++){
        if(veg[i]==2||veg[i]==5||veg[i]==8||veg[i]==12||veg[i]==
17||veg[i]==19||veg[i]==21||veg[i]==23||veg[i]==27||veg[i]==30){
            count++;}
            else{
                mistake4++;
            }
        }
    }
    System.out.println("You made "+mistake4+" mistakes.");

    System.out.println("The right answer is:");
    System.out.println("Sugar: 1 4 6 7 11 13 18 28 37 15\nFat:
3 14 24 25 26 29 33 38 31 39\nProtein: 32 9 10 40 35 22 20 16 36
39\nVegetables:2 5 8 12 17 19 21 23 27 30");

    System.out.println("You made
"+(mistake1+mistake2+mistake3+mistake4)+"mistakes in total.");
    System.out.println("You can have "+count+" points");

    System.out.println("There will be two levels in this
section of game:Beginner and Expert.");
    System.out.println("In the beginner level, you will need to
answer the calorie content of a food from 3 options.");
    System.out.println("In the expert level,you will need to
answer the calorie content of a food from your memory,no options or
any other questions about diet.");
    System.out.print("Are you a beginner?\nSelect Y/y for yes
or N/n for no:");
    stage=kb.next().charAt(0);
    if (stage=='Y' || stage=='y') {
        System.out.print("Welcome to the beginner level!\nDon't
worry you are going to be an expert soon!");
        System.out.println("Want to start the game?You will have
10 questions.Put yes or no to continue:");
        permission=kb.next();
        if(permission.equals("yes") || permission.equals("Yes") || p
ermission.equals("YES")) {
            System.out.println("1)What is the calorie content of
a boiled egg?\na.70-80 b.30-40 c.100-120");
            System.out.print("Put your answer:");
            bans1=kb.next().charAt(0);

```



```

    if(bans1=='a'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is a.");
    System.out.println("2)What is the calorie content of
an apple?\na.90-100  b.30-40  c.10-30");
    System.out.print("Put your answer:");
    bans1=kb.next().charAt(0);
    if(bans1=='a'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is a.");
    System.out.println("3)What is the calorie content of
1 glass cow milk?\na.20-40  b.50-80  c.140-150");
    System.out.print("Put your answer:");
    bans1=kb.next().charAt(0);
    if(bans1=='c'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is c.");
    System.out.println("4)What is the calorie content of
a banana?\na.70-80  b.100-120  c.20-40");
    System.out.print("Put your answer:");
    bans1=kb.next().charAt(0);
    if(bans1=='b'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is b.");
    System.out.println("5)What is the calorie content of

```

```

1 plate rice?\na.250-300  b.50-100  c.100-150");
    System.out.print("Put your answer:");
    bansl=kb.next().charAt(0);
    if(bansl=='a'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is a.");
    System.out.println("6)What is the calorie content of
a chicken breast?\na.70-80  b.165-195  c.200-300");
    System.out.print("Put your answer:");
    bansl=kb.next().charAt(0);
    if(bansl=='b'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is b.");
    System.out.println("7)What is the calorie content of
a bowl of lentils?\na.70-80  b.30-40  c.116-130");
    System.out.print("Put your answer:");
    bansl=kb.next().charAt(0);
    if(bansl=='c'){
        System.out.println("The answer is correct.");
        point++;
    }
    else
        System.out.println("The answer is
incorrect. Correct answer is c.");
    System.out.println("8)What is the calorie content of
a slice of bread?\na.80-100  b.60-70  c.10-20");
    System.out.print("Put your answer:");
    bansl=kb.next().charAt(0);
    if(bansl=='b'){
        System.out.println("The answer is correct.");
        point++;
    }

```

```

    }

    else
        System.out.println("The answer is
incorrect.Correct answer is b.");
        System.out.println("9)What is the calorie content of
a spoon of mixed-fruit jam?\na.20-25  b.50-80  c.100-120");
        System.out.print("Put your answer:");
        bans1=kb.next().charAt(0);
        if(bans1=='a'){
            System.out.println("The answer is correct.");
            point++;

        }

        else
            System.out.println("The answer is
incorrect.Correct answer is a.");
            System.out.println("10)What is the calorie content of
a glass of cold drinks(Coca-cola)?\na.180-200  b.30-40  c.100-120");
            System.out.print("Put your answer:");
            bans1=kb.next().charAt(0);
            if(bans1=='a'){
                System.out.println("The answer is correct.");
                point++;

            }

            else
                System.out.println("The answer is
incorrect.Correct answer is a.");

                System.out.println("Congratulations!You have mastered
the beginner level.Your score is "+point);
                System.out.println("Do you want to go to the expert
level?Answer yes or no:");
                permission1=kb.next();
                if(permission1.equals("yes")||permission1.equals("Yes
")||permission1.equals("YES")){
                    expert++;}
                if(permission1.equals("no")||permission1.equals("No")
||permission1.equals("No")){
                    System.out.println("Thank you for playing this
section.");
                }
            }
    }
}

```

```

    }
    if(permission.equals("no")||permission.equals("No")||permission.equals("NO")){
        System.out.println("Why this is a good game, you are missing an amazing chance to learn...");
    }
    if ((stage=='N' || stage=='n') || (expert==1)) {
        System.out.println("Welcome to the expert level!\nPractice makes a man perfect!");
        System.out.println("You will get 5 questions.");
        System.out.println("What is the ideal calorie content for breakfast?");
        bans2=kb.nextInt();
        if(bans2>700&&bans2<800){
            System.out.println(bans2+"is in the correct range.");
            point1++;
        }
        else
            System.out.println(bans2+" is not in the correct range.The correct answer is 700-800 calories");
        System.out.println("What is the ideal calorie content for lunch?");
        bans2=kb.nextInt();
        if(bans2>500&&bans2<600){
            System.out.println(bans2+"is in the correct range.");
            point1++;
        }
        else
            System.out.println(bans2+" is not in the correct range.The correct answer is 500-600 calories");
        System.out.println("What is the ideal calorie content for dinner?");
        bans2=kb.nextInt();
        if(bans2>300&&bans2<400){
            System.out.println(bans2+"is in the correct range.");
            point1++;
        }
        else
            System.out.println(bans2+" is not in the correct range.The correct answer is 300-400 calories");
    }
}

```

```

    System.out.println("Should you take a heavy meal before
sleep?Answer yes or no");
    answer=kb.next();
    if(answer.equals("no")||answer.equals("No")||answer.equa
ls("NO")){
        System.out.println("Your answer is correct.");
        point1++;
    }

    if(answer.equals("yes")||answer.equals("YES")||answer.eq
uals("Yes"))
        System.out.println("Your answer is incorrect.You
should never take a heavy meal before sleep.");
    System.out.println("What is the calorie content of a
coconut?");
    bans2=kb.nextInt();
    if(bans2>300&&bans2<400){
        System.out.println(bans2+" is in the correct
range.");
        point1++;
    }
    else
        System.out.println(bans2+" is not in the correct
range.The correct range is 300-400.");
    System.out.println("Congratulations!You have mastered
the expert level.Your score is "+point1);

    int sum1=0,sum2=0,sum3=0;
    String item="",item1="",item2="";
    String[] foods
={"apple","avocado","rice","brownie","tofu","cheeseburger","coke","o
atmeal",
    "frenchfries","carrot","juice","cabbage","egg","brocc
oli","shrimp","chips","spinach",
    "corn","eggroll","lettuce","steak","icecream","walnut
","milk","tuna","bagel","pork","chicken"};

    int[] cal={50,160,300,466,76,400,100,
        68,312,64,90,30,70,20,50,150,28,
        80,200,30,200,100,80,100,80,200,200,100};

    System.out.println("apple      avocado      rice

```

```

brownie      tofu      cheeseburger    coke      chips      bagel");
juice        cabbage   egg          broccoli  shrimp     pork");
lettuce      steak     icecream    walnut   milk       tuna
chicken ");

System.out.println("Type the items you would like to
have in breakfast: Type 'done' if you have completed selection:");

while(!item.equals("done")){
    item=kb.next();
    for (int m=0;m<foods.length;m++){
        if (foods[m].equals(item))
            sum1+=cal[m];
    }
}

System.out.println("Your total calorie in
breakfast:"+sum1);

System.out.println("Type the items you would like to
have in lunch: Type 'done' if you have completed selection:");

while(!item1.equals("done")){
    item1=kb.next();
    for (int n=0;n<foods.length;n++){
        if (foods[n].equals(item1))
            sum2+=cal[n];
    }
}

System.out.println("Your total calorie in lunch:"+sum2);

System.out.println("Type the items you would like to
have in dinner: Type 'done' if you have completed selection:");

while(!item2.equals("done")){
    item2=kb.next();
    for (int l=0;l<foods.length;l++){
        if (foods[l].equals(item2))
            sum3+=cal[l];
    }
}

```

```
System.out.println("Your total calorie in
dinner:"+sum3);
System.out.println("Your total calorie in
day:"+ (sum1+sum2+sum3));
    if ((sum1+sum2+sum3)>1500)
        System.out.println("You need to take less calorie.Its
more than the ideal");
    if ((sum1+sum2+sum3)<1000)
        System.out.println("You need to take more calorie.Its
less than the ideal.");
    if ((sum1+sum2+sum3)>1000&&(sum1+sum2+sum3)<1500)
        System.out.println("Your diet is the ideal one");
    }
}}
```