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Experiment No.	**3b**

AIM:	**Method Overloading**
Program 1	
PROBLEM STATEMENT :	Create a Test class with a data double base, int power, int logBase, int argument. Create a default, no-argument constructor which sets the default value of all variables to 2. There are 2 overloaded functions: 1. double calculate (double base, int power) This function returns the value when *base* is raised to *power* For example: calculate (3.0, 2) returns the value of 3.0 raised to 2 i.e., 9.0 2. double calculate (int logBase, int argument) This function returns the value of the log of *argument* to the base *logBase*. For example: calculate (3, 9) returns log of 9 to the base 3 i.e., 2.0 Create a main method in a separate class to call the above functions with the following inputs: 1. calculate (2, 4)

PROGRAM:	**class Test{** **double base;** **int power;** **int logBase;** **int argument;** **public Test() {** **base = 2;** **power = 2;** **logBase = 2;** **argument = 2;** **}** **//Method to calculate power.** **void calculate (double base, int power){** **System.out.println("Answer: " + Math.pow(base, power));** **}** **//Method to calculate log.** **void calculate (int logBase, int argument){** **System.out.println("Answer: " +** **Math.log10(argument)/Math.log10(logBase));** **}** **}** **public class Mainlog {** **public static void main(String[] args) {** **Test test = new Test();** **//Log calculation** **test.calculate(2,8);** **//Power calculation** **test.calculate(1.5, 4);** **}** **}**
RESULT:	

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$ javac Mainlog.java
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$ java Mainlog
Answer: 3.0
Answer: 5.0625
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$
```

Program 2	
PROBLEM STATEMENT :	To maintain one's body weight, an adult human needs to consume enough calories daily to (1) meet the basal metabolic rate (energy required to breath, maintain body temperature, etc.), (2) account for physical activity such as exercise, and (3) account for the energy required to digest the food that is being eaten. For an adult that weighs *P* pounds we can estimate these caloric requirements using the following formulas: 1. Basal metabolic rate: Calories required = 70 * (*P* / 2.2)0.756 2. Physical activity: Calories required = 0.0385 * *Intensity* * *P* * *Minutes* Here, *Minutes* is the number of minutes spent during the physical activity, and *Intensity* is a number that estimates the intensity of the activity. Here are some sample numbers for the range of values: _A_c_t_iv_i_t_y_____In_t_e_n_s_i_ty_

	Running 10 mph: 17 Running 6 mph: 10 Basketball: 8 Walking 1 mph: 1 3. Energy to digest food: calories required = *TotalCaloriesConsumed* * 0.1 In other words, 10% of the calories we consume goes towards digestion. Write a function that computes the calories required for the basal metabolic rate, taking as input a parameter for the person's weight. Write another function that computes the calories required for physical activity, taking as input parameters for the intensity, weight, and minutes spent exercising. Use these functions in a program that inputs a person's weight, an estimate for the intensity of physical activity, the number of minutes spent performing the physical activity, and the number of calories in one serving of your favorite food. The program should then calculate and output how many servings of that food should be eaten per day to maintain the person's current weight at the specified activity level.

	The computation should include the energy that is required to digest food. You can find estimates of the caloric content of many foods on the web. **For example, a double cheeseburger has approximately 1000 calories.**

PROGRAM:	**/*
	* Flow:
	* Input: All inputs.
	* Calorie count:2 function:
	* 1) Basal
	* 2) Physical
	*
	* Physical would require many functions.
	* Intensity.
	* Activity and speed.
	*
	* function to calculate calorie for different intensity, speed, activity.
	*/
	
	import java.util.Scanner;
	
	class Calorie{
	String name;
	int body_weight, intensity, min_exercise, favorite_cal;
	
	public Calorie(String name, int body_weight, int intensity, int min_exercise, int favorite_cal) {
	this.name = name;
	this.body_weight = body_weight;
	this.intensity = intensity;
	this.min_exercise = min_exercise;
	this.favorite_cal = favorite_cal;
	}**

```
    double calorieCounter(int body_weight){
        return 70 * (body_weight / 2.2)*0.756;
    }

    //0.0385 * Intensity * P * Minutes
    double calorieCounter(int body_weight, int intensity, int
min_exercise){
        return 0.0385 * intensity * body_weight * min_exercise;
    }

    double totalCalRequired() {
        return calorieCounter(body_weight) +
calorieCounter(body_weight, intensity, min_exercise);

    }
    double calorieCounter(double total){
        return totalCalRequired() * 0.1;
    }

    double serving(){
        double serve = totalCalRequired()/favorite_cal;
        return Math.floor(serve);

    }

}

public class HealthApp{
    public static void main(String[] args) {
        String name;
        int body_weight, intensity, min_exercise, favorite_cal;
        double total = 0;
        Scanner in = new Scanner(System.in);

        System.out.println("Hello, Welcome to our Health-App");



        System.out.print("Enter your name: ");
        name = in.nextLine();
        System.out.print("Enter your Body Weight: ");
```

```
        body_weight = in.nextInt();
        System.out.print("Enter your duration of exercise: ");
        min_exercise = in.nextInt();



        System.out.println("For your reference: ");

System.out.println("A_c_t_iv_i_t_y_____In_t_e_n_s_i_ty_\n" + //
                    "Running 10 mph: \t\t\t17\n" + //
                    "Running 6 mph: \t\t\t\t10\n" + //
                    "Basketball: \t\t\t\t8\n" + //
                    "Walking 1 mph: \t\t\t\t1");
        System.out.print("Now, enter your intensity (in numbers): ");
        intensity = in.nextInt();

        System.out.println("Food Item_____Calorie Count (per 100 grams)\n" + //
                    "Double cheese burger: \t\t\t295\n" + //
                    "Pizza:  \t\t\t\t266\n" + //
                    "Gulab Jamun: \t\t\t\t323\n" + //
                    "Rasgulla: \t\t\t\t186");



        System.out.print("Enter the calories for your favourite food: ");
        favorite_cal = in.nextInt();

        Calorie cal = new Calorie(name, body_weight, intensity, min_exercise, favorite_cal);
        total = cal.totalCalRequired();

System.out.println("Select your choice for the type of calorie: \n1. Basal Calories  2. Calories burned due to Physical Activity  3. Calories Required for Digestion.");

    int choice = in.nextInt();
    switch (choice) {
        case 1:
            double basal = cal.calorieCounter(body_weight);
            System.out.println("Your basal calories is: " + basal);
```

```
            break;

        case 2:
            double physical = cal.calorieCounter(body_weight, intensity,
min_exercise);
            System.out.println("Your Calories burned due to Physical
Activity: " + physical);
            break;

        case 3:
            double digest = cal.calorieCounter(total);
            System.out.println("Calories requried for digestion: " + digest);
            break;
        default:
            System.out.println("Invalid choice.");
            break;
    }

    double serving = cal.serving();
    System.out.println("You can eat " + serving + " servings of your
favourite food.");

    System.out.println();
    System.out.println("Thank you for you using our app.");
    }

}
```

RESULT:

```
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$ javac HealthApp.java
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$ java HealthApp
Hello, Welcome to our Health-App
Enter your name: Debjit
Enter your Body Weight: 80
Enter your duration of exercise: 2
For your reference:
A_c_t_iv_i_t_y_____________________In_t_e_n_s_i_ty_
Running 10 mph:                          17
Running 6 mph:                           10
Basketball:                              8
Walking 1 mph:                           1
Now, enter your intensity (in numbers): 20
Food Item___________________Calorie Count (per 100 grams)
Double cheese burger:                    295
Pizza:                                   266
Gulab Jamun:                             323
Rasgulla:                                186
Enter the calories for your favourite food: 500
Select your choice for the type of calorie:
1. Basal Calories  2. Calories burned due to Physical Activity  3. Calories Required for Digestion.
1
Your basal calories is: 1924.363636363636
You can eat 4.0 servings of your favourite food.

Thank you for you using our app.
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$ java HealthApp
Hello, Welcome to our Health-App
Enter your name: Alok
Enter your Body Weight: 75
Enter your duration of exercise: 5
For your reference:
A_c_t_iv_i_t_y_____________________In_t_e_n_s_i_ty_
Running 10 mph:                          17
Running 6 mph:                           10
Basketball:                              8
Walking 1 mph:                           1
Now, enter your intensity (in numbers): 10
Food Item___________________Calorie Count (per 100 grams)
Double cheese burger:                    295
Pizza:                                   266
Gulab Jamun:                             323
Rasgulla:                                186
```

```
Running 6 mph:                          10
Basketball:                             8
Walking 1 mph:                          1
Now, enter your intensity (in numbers): 10
Food Item____________________Calorie Count (per 100 grams)
Double cheese burger:                   295
Pizza:                                  266
Gulab Jamun:                            323
Rasgulla:                               186
Enter the calories for your favourite food: 300
Select your choice for the type of calorie:
1. Basal Calories  2. Calories burned due to Physical Activity  3. Calories Required for Digestion.
2
Your Calories burned due to Physical Activity: 144.375
You can eat 6.0 servings of your favourite food.

Thank you for you using our app.
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$ java HealthApp
Hello, Welcome to our Health-App
Enter your name: Samarth
Enter your Body Weight: 50
Enter your duration of exercise: 1
For your reference:
A_c_t_iv_i_t_y____________________In_t_e_n_s_i_ty_
Running 10 mph:                         17
Running 6 mph:                          10
Basketball:                             8
Walking 1 mph:                          1
Now, enter your intensity (in numbers): 30
Food Item____________________Calorie Count (per 100 grams)
Double cheese burger:                   295
Pizza:                                  266
Gulab Jamun:                            323
Rasgulla:                               186
Enter the calories for your favourite food: 1000
Select your choice for the type of calorie:
1. Basal Calories  2. Calories burned due to Physical Activity  3. Calories Required for Digestion.
3
Calories requried for digestion: 126.04772727272726
You can eat 1.0 servings of your favourite food.

Thank you for you using our app.
psipl@psipl-OptiPlex-3000:~/Desktop/2023300065$
```

CONCLUSION:	I have learnt more about method overloading and the use of constructors,classes and various functions. I have also learnt about the use of switch case.