

## Module 8 Example: Integrated activity

The Star Gym has piloted a special weight-loss programme for a group of twenty

people. 1.1 When a member enrolls for the weight-loss programme, his/her body (BMI) is calculated using the formula:  
 mass index

$$BMI = \frac{\text{Weight}}{\text{height}^2}$$

Based on the BMI calculation, a member is classified as being overweight, normal weight or underweight as follows:

BMI	WEIGHT DESCRIPTION
<18.5	Underweight
18.5 to 25	Normal weight
>25	Overweight

Do the following:

- Enter the weight and height of a member in kilograms and metres respectively.
- Calculate the BMI
- Display the BMI formatted to two decimal places and a message indicating whether the member is underweight, normal weight or overweight

### Sample output

```
Enter the current weight: 90
Enter the height: 1.67
bmi = 32.27
Overweight
```

1.2 A member who has enrolled for the weight-loss program wants to know how many days it will take to reach his/her goal weight.

Use the member's weight from 1.1 and enter the member's goal weight. The following applies:

- Assume that weight-loss is 375 grams (0.375kg) per day, starting on the first day.
- If the goal weight is less than the current weight, display the day number and the weight of the member from the first day until he/she reaches his/her goal weight.
- Display the message "Invalid value entered" if the goal weight is greater than or equal to the member's current weight.



Example of output if current weight is 90 kg and the goal weight is 85 kg:

Weight: 90.0	
Goal Weight: 85.0	
Day	Weight
1	89.625
2	89.250
3	88.875
4	88.500
5	88.125
6	87.750
7	87.375
8	87.000
9	86.625
10	86.250
11	85.875
12	85.500
13	85.125
14	84.750

Example of output if the current weight is 65 kg and the goal weight is 80 kg:  
 Invalid value entered

- 1.3 A membership code must be compiled for each person joining the weigh-loss programme.

Write code to do the following:

- Enter the full name, gender (Male or Female) and whether the member has any allergies (true or false) or not
- The membership code consists of three parts that are compiled as follows:
  - Part 1
    - Convert the full name to upper case.
    - Remove all vowels and spaces
  - Part 2
    - Add the characters '-M-' or '-F-' to Part 1 of the membership code, depending on whether the member is male or female.
  - Part 3
    - Add a check number to the membership code as a three-digit number. The check number is constructed as follows:

- Generate a random number in the range 1 to 9 (1 and 9 included). This will be the first digit.
- Add the value 10 to the random number.
- Determine the number of letters that the full name consist without the vowels and spaces (first part of the member code). Add the value to the current value. The total value will be the last two digits of the check number.
  - Example:  
In Part 1, the full name John Smith will become JHNSMTH (7 letters).
  - If the random number is 6, then the last two digits will be 23(6 + 10 + 7 = 23).
  - The check number will then be 623
- Add the asterisk character (\*) to the membership code if the member has an allergy.

### Python Code

```
# 1.1
import math, random
weight=float(input("Enter the current weight: "))
height=float(input("Enter the height: "))
bmi=weight/math.pow(height,2)
print("bmi = %8.2f" % (bmi))
if bmi<18.5:
    print("Underweight")
else:
    if bmi>25:
        print("Overweight")
    else:
        print("Normal weight")

#1.2
goalWeight=float(input("Enter the goal weight: "))
if goalWeight>=weight:
    print("Invalid value entered")
else:
    count=0
    print("Weight: ",weight)
    print("Goal Weight: ",goalWeight)
    print();
    print("%8s      %8s" % ("Day", "Weight"))
    while weight>goalWeight:
        count=count+1
        weight=weight-0.375
        print("%8s      %8.3f" % (count,weight))

#1.3
print()
fullName=input("Enter the full name: ")
```



```

gender= input("Enter the gender (Male/Female)): ")
allergy=input("Enter allergies (True/False): ")
fullName=fullName.upper()
part1=""
for i in range(0,len(fullName)):
    if not(fullName[i] in ["A","E","I","O","U"," "]):
        part1=part1+fullName[i]
if gender=="Male":
    part2=part1+"-M-"
else:
    part2=part1+"-F-"
num=random.randint(1,9)
print("Random Number: ",num)
checkNum=num+10+len(part1)
part3=str(num)+str(checkNum)
part3=part2+part3
if allergy=="True":
    part3=part3+"*"
print("Membership code: ",part3)

```

### Output

Enter the current weight: 90  
 Enter the height: 1.67  
 bmi = 32.27  
 Overweight  
 Enter the goal weight: 85  
 Weight: 90.0

Goal Weight: 85.0

Day	Weight
1	89.625
2	89.250
3	88.875
4	88.500
5	88.125
6	87.750
7	87.375
8	87.000
9	86.625
10	86.250
11	85.875
12	85.500
13	85.125
14	84.750

Enter the full name: Peter Smith  
 Enter the gender (Male/Female): Male  
 Enter allergies (True/False): True



Random Number: 1

Membership code: PTRSMTH-M-118\*

