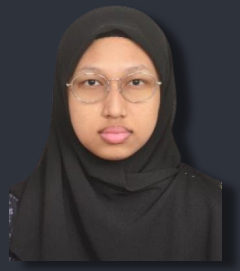
Algorithm & Programming

```
{
    [Semester 1 2021/2022]


    printf("\n Section : 4");
    printf("\n Group : 2");
    printf("\n Lecturer : DR. NORHAMREEZA BINTI ABDUL HAMID");
}
```

```
{

    printf("\n GROUP MEMBERS : ");
    scanf("%d", &group_members);

    if (group_members==1)
    {
        printf("\n Name : MOHAMAD ARIF AZINUDDIN BIN ZAIDI");
        printf("\n Matric NO. : AI210125");


        printf("\n Passport image :                    ");



    }
}
```

```
{

    else if (group_members==2)
    {
        printf("\n Name : ABDUL ALIF BIN ABDUL GHAFOOR");
        printf("\n Matric NO. : AI210127");

        printf("\n Passport image :                    ");



    }

}
```

```
{

    else if (group_members==3)
    {
        printf("\n Name : SITI AISHAH BINTI ABU BAKAR");
        printf("\n Matric NO. : AI210077");

        printf("\n Passport image :                    ");



    }

}
```



```
{
    else if (group_members==4)
    {
        printf("\n Name : AQMAL DANIAL BIN MUHAMMAD TAQIYUDIN");
        printf("\n Matric NO. : AI210181");

        printf("\n Passport image :                    ");



    }
    else
    {
        printf("\n Invalid input");
    }
}
```

Table Of “Contents”

```
{    switch(contents)
     {          case 01:
                                goto Project Background;
                                break;

                case 02:
                                goto Task Assignment;
                                break;

                case 03:
                                goto Pseudocode and Flowchart;
                                break;

                case 04:
                                goto Program Code Description;
                                break;

                case 05:
                                goto Discussion and Conclusion;
                                break;

                default:
                                printf(“Invalid input”);
                                break;
}    }
```

01

{

[Project Background]

< Project description >

}

Title and Theme< /1 >

{

<Project name is titled as *Alpha Quattuor (α-IV)* because all members in this Group Start with letter *'A'* and "*Quattuor*" means we have four members in this group>

}

Objective< /2 >

{

<To design a program that can calculate both the Basal Metabolic Rate (BMR) and Daily Calorie Requirement (DCR)>

<To develop a program that can calculate and record both the Basal Metabolic Rate (BMR) and Daily Calorie Rate (DCR) once a person key-in their gender, weight, height and age>

<To evaluate a program built so user can key in their information smoothly and get notified if they key in the wrong information>

}

02

[Task Assignment]

< Group members' roles >

Task Assignment

{

"This section shows which part everyone is accountable for as everyone has a different field they are good in. Throughout this project, we try to take advantage of each other skills so the project objective can be achieved"

- ❖ <Arif "Programmer" coding a C program, comment on C program, execute project with high responsibility to compile the report, write program code description, output description, prepare slide>
- ❑ <Aishah "Documentation 1" Give idea about the program, brainstorm the objective of project, prepare slide>
- ★ <Alif "Documentation 2" Write a pseudo-code for program development, assist group members ,Set-up time for group discussion, prepare slide>
- ➢ <Aqmal "Presenter" Write a flowchart, searching for reference for C program, prepare slide, present project>

}

03.1

{

[Pseudocode]

< Simple code resembles the program code >

}

Pseudocode {

```
START
            display"/*****************************************************
            GROUP 2 PROJECT ALGORITHMS AND PROGRAMMING(ARIF,ALIF,AQMAL,AISHAH)

                ALPHA QUATTUOR (α-IV) coded & commented by Arif
*****************************************************************/"
            display" ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"
            display"<                                                        >"
            display"< BMR & DCR CALCULATOR by ALPHA QUATTUOR  >
            display"<                                                        >"
            display" ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"

            display"Enter Your Name (e.g : Aliff):"
            read name
            display"--Your Name is Valid--"
```

Pseudocode

```
set age = 1
set ageRead = 0

do
display"Enter Your age (e.g : 20 years):"
read age
     While(ageRead ≠ 1)
      display"--That is not a number!! Please Try Again :) -- "
      read %*[^\n]
      display"Please insert a number for Age : "
      read age
     End while
      if(age>0 && age<100)
           display"-- Invalid Age !! Please Try Again :) --\n"
      end if
  While(age<0 && age>100)
   display"-- Your Age is Valid :v --"
```

Pseudocode

```
     set weight = 1
     set weightRead = 0
do
display"Enter Your Weight in kilogram (e.g : 70kg): "
read weight
     While(weightRead ≠ 1)
     display"--That is not a number!! Please Try Again :) -- "
     read %*[^\n]
     display"Please insert a number for Weight : "
     read weight
        End while
     if(weight<20 && weight>300)
          display"-- Invalid Weight !! Please Try Again :) --"
     end if
  While(weight<20 || weight>300)
          display("-- Your Weight is Valid :v --\n");
```

Pseudocode

```
      set height = 1
      set heightRead = 0
 do
display"Enter Your Height in centimeter (e.g: 170cm): "
read height
    While(heightRead ≠ 1)
     display"--That is not a number!! Please Try Again :) -- "
     read %*[^\n]
     display"Please insert a number for Height : "
          read height

    End while
    if(height<90 && height>210)
         display"-- Invalid Height !! Please Try Again :) --"
    end if
While (height<90 || height>210)
  display("-- Your Height is Valid :v --")
```

Pseudocode

```
      set gender = 1
      set genderRead = 0
do
 display"Enter Your Gender (e.g : 1 : Male or 2 : Female): "
 read gender
    While(genderRead ≠ 1)
      display"--That is not a number!! Please Try Again :) -- "
      read %*[^\n]
      display "Please insert a number for Gender : "
      read gender
End while
      if (gender=1)
      BMR = 66+(13.7*weight)+(5*height)-(6.8*age
            display" -- Your Gender is Valid :v --"
                  display "Male"
      else if(gender=2)
            BMR = 655+(9.6*weight)+(1.8*height)-(4.7*age)
                  printf(" -- Your Gender is Valid :v --"
            display "Female"
      else
            display"-- Invalid Gender !! Please Try Again :) --"
      end if
   while(gender<1 || gender>2)
```

Pseudocode

```
                        set level = 1
                        set readlevel = 0
                    do
                       display "Enter Your Level of Activity: "
                       display "1. Sedentary : little or no exercise, desk job
                       2.Light Activity : light exercise or sports 1-3 days/week 3.
                                        Moderate Activity : moderate exercise or sports 3-5
days/week4.
                                        Very Active : hard exercise or sports 6-7 days/week5.
                                        Extra Active : hard daily exercise or sports & physical job
                                        or 2x day training, i.e. marathon, contest. Enter your
choice: "

                    while (levelRead ≠ 1)
                              display"--That is not a number!! Please Try Again :) -- "
                              read %*[^\n]
                              display "Please insert a number for Level of Activity : "
                              read level
                     End while
                              if(level ⩾ 1 && level ⩽ 5)
                                  display" -- Your Level of Activity is Valid :v --"
                              else
                                  display"-- Invalid Level of Activity!! Please Try Again
                                      :) --"
                              end if
```

Pseudocode

```
case based on number
    case 1:
                    DCR = BMR*1.2;
               strcpy"Sedentary"

          case 2:
                    DCR = BMR*1.375;
                    display"Light Activity"

          case 3:
                    DCR = BMR*1.55;
               display"Moderate Activity"

          case 4:
                    DCR = BMR*1.725;
                    display"Very Active"

          case 5:
                    DCR = BMR*1.9;
                    display"Extra Active"

          default:
                    DCR = 0;
                      display"Invalid Activity"
     End case
```

Pseudocode

```
display"————————————————————————————Summary————————————————————————————"
            display name
                      display age
                      display weight
                 display height
                 display sex
                 display activity
            display calculation for BMR
                 display BMR
            display calculation for DCR
                 display DCR
                 display "Note Based on this calculation, you would need DCR
                                      calories food to sustain your daily
activities."
                      display"═══════════THANK YOU═══════════"
                  set end_task = 1
                  set end_taskRead = 0
```

Pseudocode

```
                    do
                      display"Press '1' if you want to re-enter the input and
                                                  Press '2' to end this program :) : "
                      read end_task
                    while (end_taskRead ≠ 1)
                      display"--That is not a number!! Please Try Again :) -- "
                      read %*[^\n]
                      display "Please insert a number for this question: "
                      read end_task
                         End while

                        if(end_task==1) goto loop

                        else if(end_task==2)
                         display"========END OF PROGRAM========="\
                           break
                        else
                         display"-- Invalid Number !! Please Try Again :) --"

              While(end_task<1 || end_task>2)
    STOP
}
```

03.2

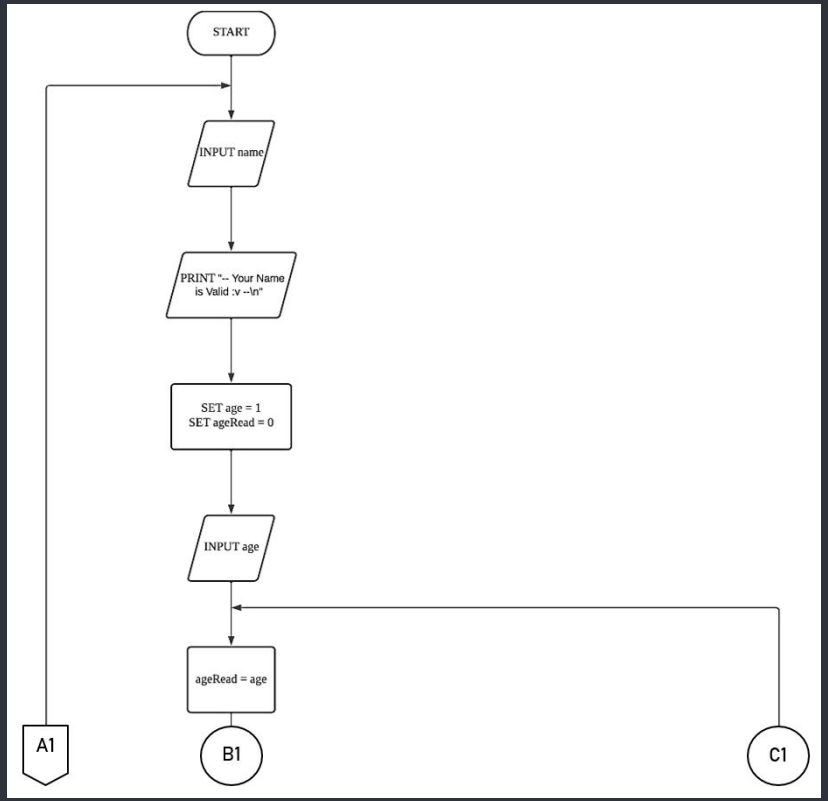
{

[Flowchart]

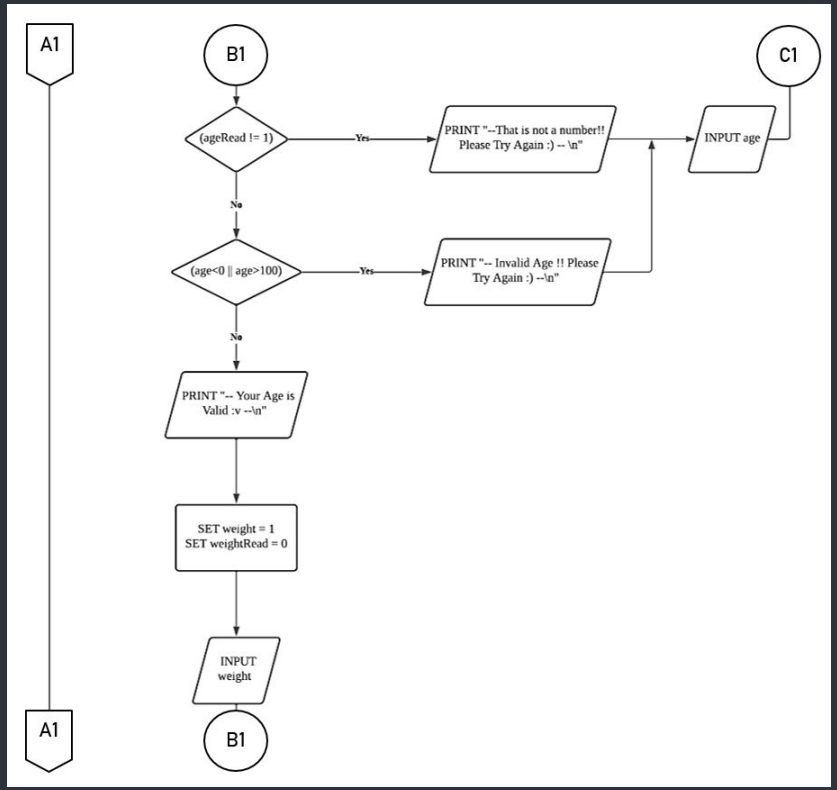
< Illustrated step for the programming process >

}

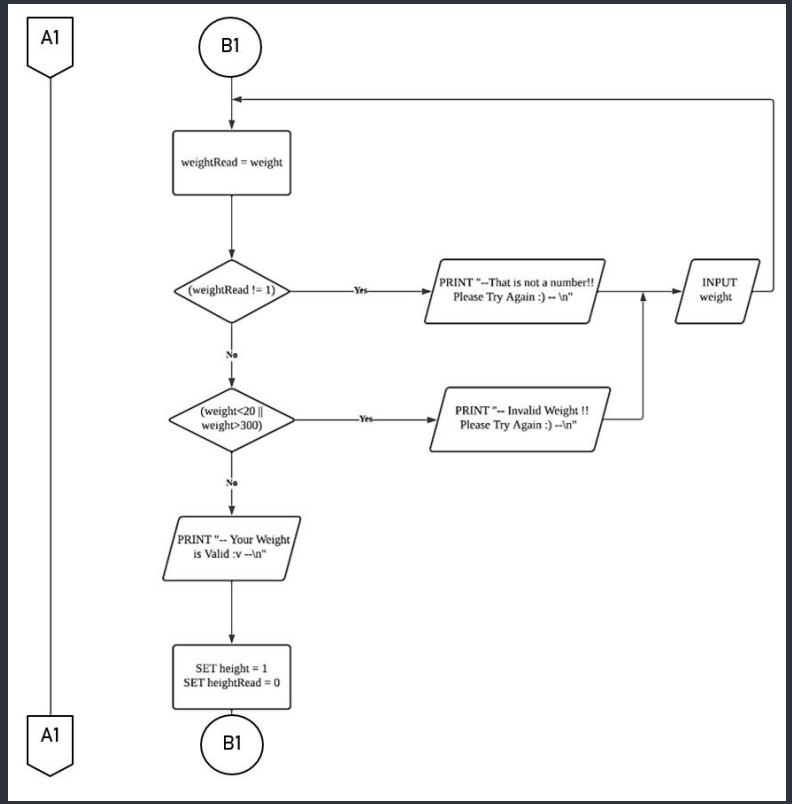
Flowchart {


START
INPUT name
PRINT "-- Your Name is Valid :v --\n"
SET age = 1
SET ageRead = 0
INPUT age
ageRead = age
A1
B1
C1

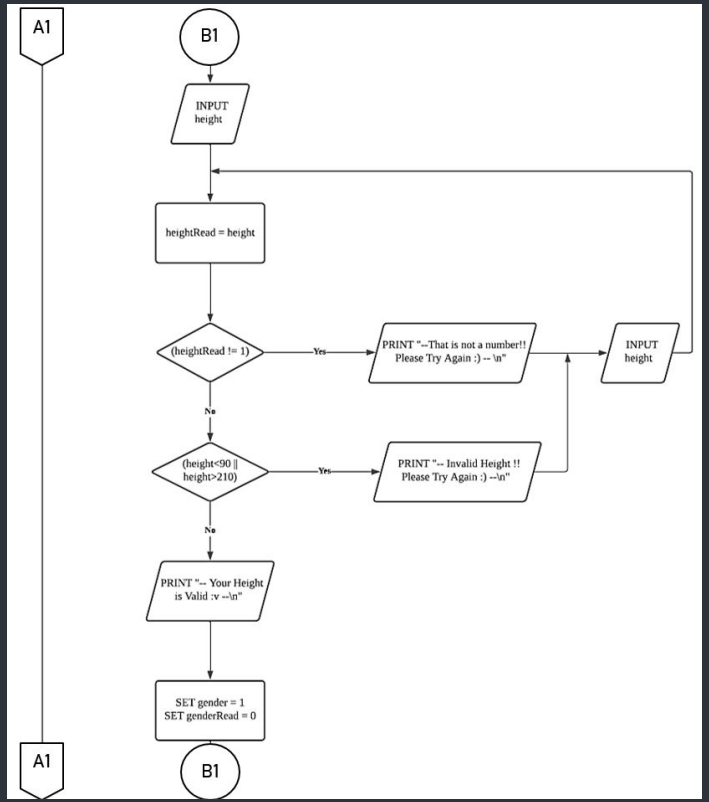
Flowchart


A1
B1
C1
(ageRead != 1)
Yes
PRINT "--That is not a number!! Please Try Again :) -- \n"
INPUT age
No
(age<0 || age>100)
Yes
PRINT "-- Invalid Age !! Please Try Again :) --\n"
No
PRINT "-- Your Age is Valid :v --\n"
SET weight = 1
SET weightRead = 0
INPUT weight
A1
B1

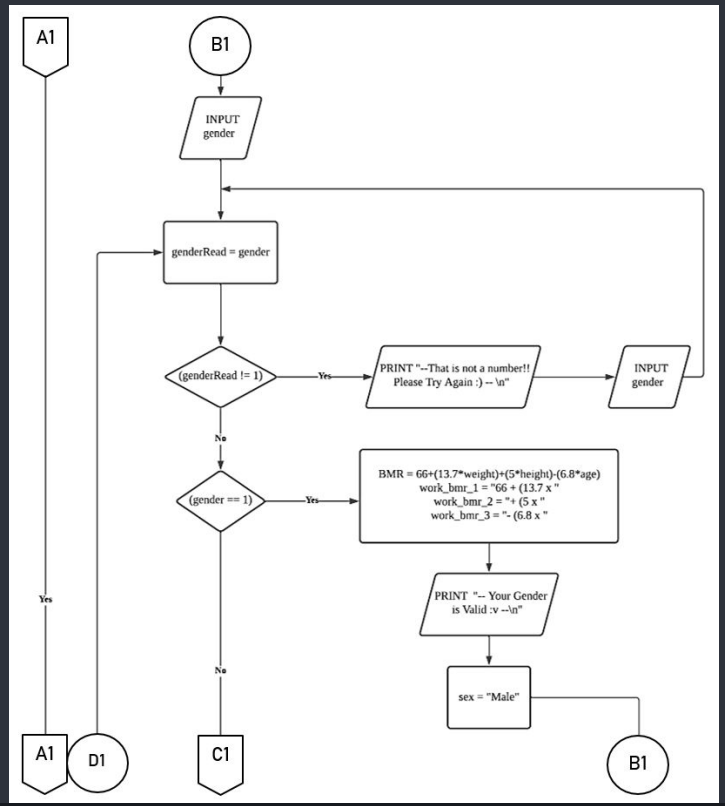
Flowchart


A1
B1
weightRead = weight
(weightRead != 1)
Yes
PRINT "--That is not a number!! Please Try Again :) -- \n"
INPUT weight
No
(weight<20 || weight>300)
Yes
PRINT "-- Invalid Weight !! Please Try Again :) --\n"
No
PRINT "-- Your Weight is Valid :v --\n"
SET height = 1
SET heightRead = 0
A1
B1

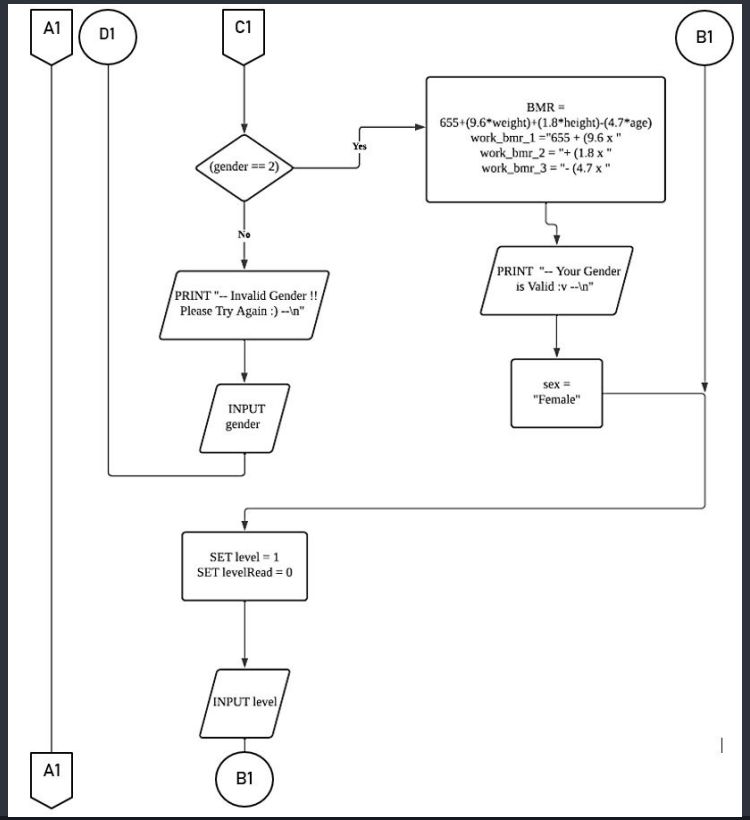
Flowchart


A1
B1
INPUT height
heightRead = height
(heightRead != 1)
Yes
PRINT "--That is not a number!! Please Try Again :) -- \n"
INPUT height
No
(height<90 || height>210)
Yes
PRINT "-- Invalid Height !! Please Try Again :) --\n"
No
PRINT "-- Your Height is Valid :v --\n"
SET gender = 1
SET genderRead = 0
A1
B1

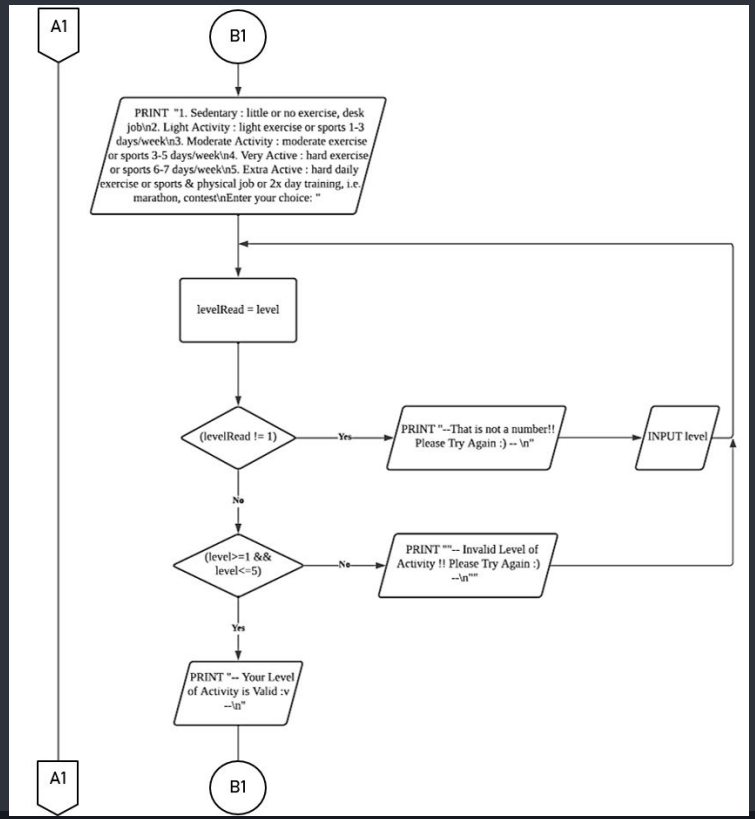
Flowchart


A1
B1
INPUT gender
genderRead = gender
(genderRead != 1)
Yes
PRINT "--That is not a number!! Please Try Again :) -- \n"
INPUT gender
No
(gender == 1)
Yes
BMR = 66+(13.7*weight)+(5*height)-(6.8*age)
work_bmr_1 = "66 + (13.7 x "
work_bmr_2 = "+ (5 x "
work_bmr_3 = "- (6.8 x "
PRINT "-- Your Gender is Valid :v --\n"
sex = "Male"
Yes
No
A1
D1
C1
B1

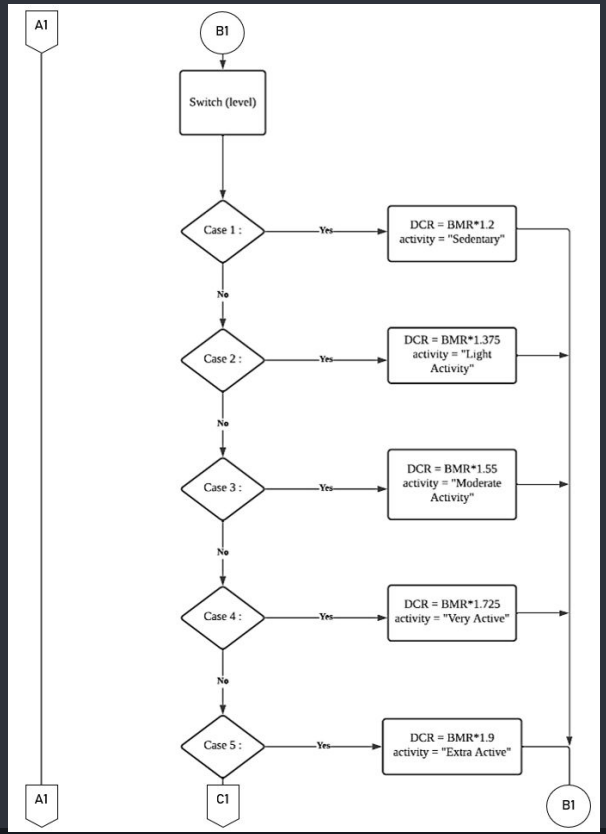
Flowchart


A1
D1
C1
B1
(gender == 2)
Yes
No
BMR =
655+(9.6*weight)+(1.8*height)-(4.7*age)
work_bmr_1 ="655 + (9.6 x "
work_bmr_2 = "+ (1.8 x "
work_bmr_3 = "- (4.7 x "
PRINT "-- Invalid Gender !!
Please Try Again :) --\n"
PRINT "-- Your Gender
is Valid :v --\n"
INPUT
gender
sex =
"Female"
SET level = 1
SET levelRead = 0
INPUT level
A1
B1

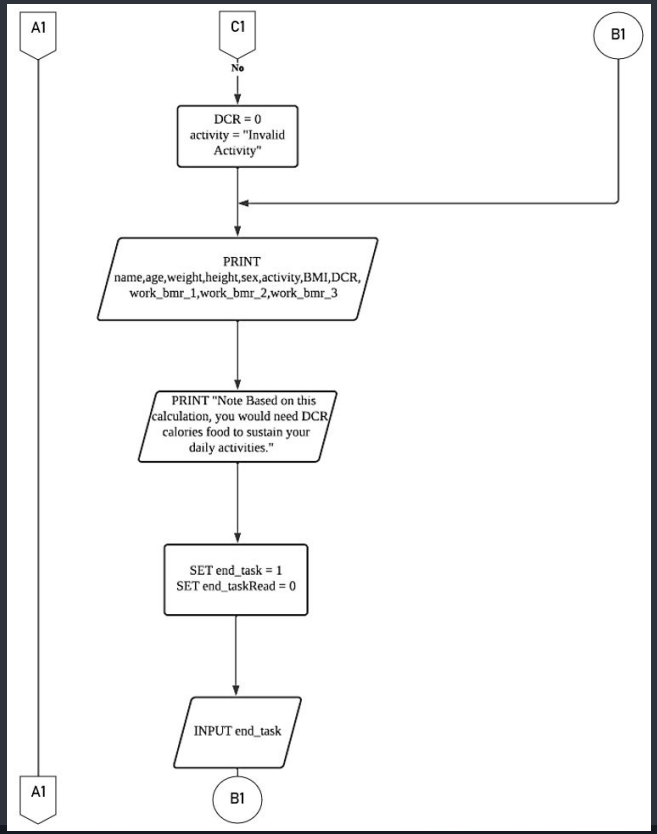
Flowchart


A1
B1
PRINT "1. Sedentary : little or no exercise, desk job\n2. Light Activity : light exercise or sports 1-3 days/week\n3. Moderate Activity : moderate exercise or sports 3-5 days/week\n4. Very Active : hard exercise or sports 6-7 days/week\n5. Extra Active : hard daily exercise or sports & physical job or 2x day training, i.e. marathon, contest\nEnter your choice: "
levelRead = level
(levelRead != 1)
Yes
PRINT "--That is not a number!! Please Try Again :) -- \n"
INPUT level
No
(level>=1 && level<=5)
No
PRINT ""-- Invalid Level of Activity !! Please Try Again :) --\n""
Yes
PRINT "-- Your Level of Activity is Valid :v --\n"
A1
B1

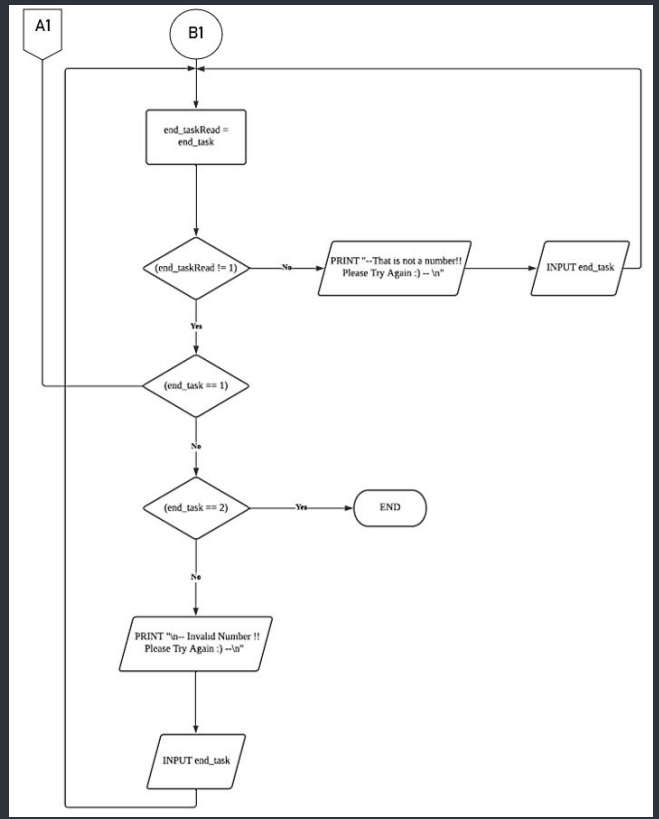
Flowchart


A1
B1
Switch (level)
Case 1 :
Yes
DCR = BMR*1.2
activity = "Sedentary"
No
Case 2 :
Yes
DCR = BMR*1.375
activity = "Light Activity"
No
Case 3 :
Yes
DCR = BMR*1.55
activity = "Moderate Activity"
No
Case 4 :
Yes
DCR = BMR*1.725
activity = "Very Active"
No
Case 5 :
Yes
DCR = BMR*1.9
activity = "Extra Active"
A1
C1
B1

Flowchart


A1
C1
B1
No
DCR = 0
activity = "Invalid Activity"
PRINT
name,age,weight,height,sex,activity,BMI,DCR,
work_bmr_1,work_bmr_2,work_bmr_3
PRINT "Note Based on this calculation, you would need DCR calories food to sustain your daily activities."
SET end_task = 1
SET end_taskRead = 0
INPUT end_task
A1
B1

Flowchart


A1
B1
end_taskRead = end_task
(end_taskRead != 1)
No
PRINT "--That is not a number!! Please Try Again :) -- \n"
INPUT end_task
Yes
(end_task == 1)
No
(end_task == 2)
Yes
END
No
PRINT "\n-- Invalid Number !! Please Try Again :) --\n"
INPUT end_task

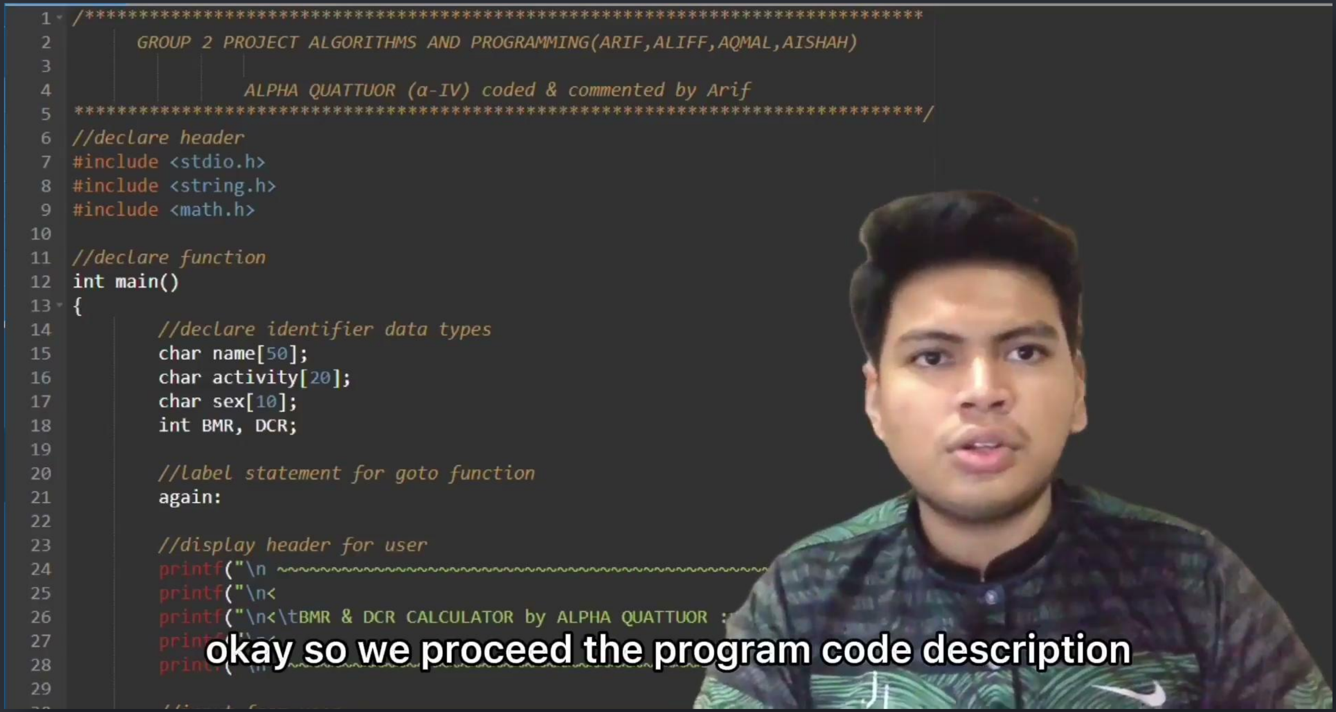
04

{ [Program Code Description & Demo] }

< Project description and trial >

[Program Code Description & Demo]

{



}

05

{

[Discussion and Conclusion]

< Validation and final outlook >

}

Discussion and Conclusion

{

Validation

< Based on the output shown, the objective is achieved. >

Teamwork

< Each person are able to show their commitment throughout the entire project. >

Insight

< There is always a chance that more improvisation are to be made in this programming world. >

Future expectation

< We get to learn something new every day, good sense of communication in this team, and the sense of accomplishment that comes from it will be our motivation to keep going. >

}

```
1
2  {
3
4
5
6
7  printf("\n ThankYou:3");
8
9
10
11
12 }
13
14
```