Programming Fundamentals

Programming Fundamentals(PRFU)	
Assignment Number	2
Assignment Name	Formative Assessment
NQF Level	4
Credits	10
Due Date	
Marks	Total marks = 190 Formative assessments through the semester contribute towards the student's module mark and are used to assess progress and identify areas for improvement. This formative assessment will contribute 25% towards final mark. Take note of the following with regards to late submissions: a. One (1) day late (-5%) b. Two (2) days late (-10%) c. Three (3) days late (-15%)
Individual / Group Assignment	Individual
Lecturer Information	
Lecturer	
Lecturer E-mail	

Learning Objective:

Formative assessment 1 will cover the following concepts:

a. Pseudocode
b. Program Control Statements
c. Arrays
d. File Handling
e. Functions
f. Systems Analysis and Design
g. Systems Planning
h. Systems Analysis
i. Systems Design
j. Systems Implementation
k. Systems Operation and Support
l. UML

m. Object-oriented Analysis and Design
n. Object Analysis
o. Object Design
p. Class Diagrams
q. Object Interaction
r. State Machine Diagrams
s. Acitivity Diagrams
t. Component and Deployment Diagrams

Attributes/Competencies Assessed:

The learner should demonstrate the following knowledge in this assessment:

a. Unit standard(s)
    a. 115359 – Demonstrate an understanding of the handling of error in a computer programming environment
    b. 115362–Manage software development source files using appropriate tools
    c. 115365 – Apply the principles of designing computer system inputs and outputs
    d. 115367 – Demonstrate logical problem solving and error detection techniques
    e. 115392 – Apply principles of creating computer software by developing a complete programme to meet given business specifications

Scope:

The scope of this formative assessment is based on a solid knwoledge to identify errors and implement sound solutions with regards to the design of a software solution using various designing techniques including various types of diagrams.

Technical Aspects:

The number of pages for this formative assessment is ***16*** and the following font and size should be used in your report:

a. Font: Arial
b. Size: 12 and 14 for headings
c. Font colour: Black

Save and upload the report as a .PDF**(No backgrounds)** with the following naming convention:

a. Student no_StudentName_StudentSurname_ModuleCode_FA2**(No ZIP folder uploads)**

Ensure adequate referencing is used when using information from either books or internet. Plagiarism is a serious offecne and can result in 0% for the assessment when excessive work is copied without proper referencing.

Please complete the following and sign as requested for Portfolio of Evidence (POE)

a. Pre-Assessment agreement (Save, sign and submit as PDF)
b. Assessment Feedback Agreement (Save, sign and submit as PDF)

Mark allocation for report

See Mark allocation sheet below

Question 1 (40)

Unit standard	*Specific outcome*	*Assessment criterion*
115392	*2*	*2*
	4	*2*
	4	*3*
	3	*2*
	6	*2*
	5	*1*
115367	*1*	*3*
	1	*4*
115365	*1*	*5*
	1	*3*
	1	*4*

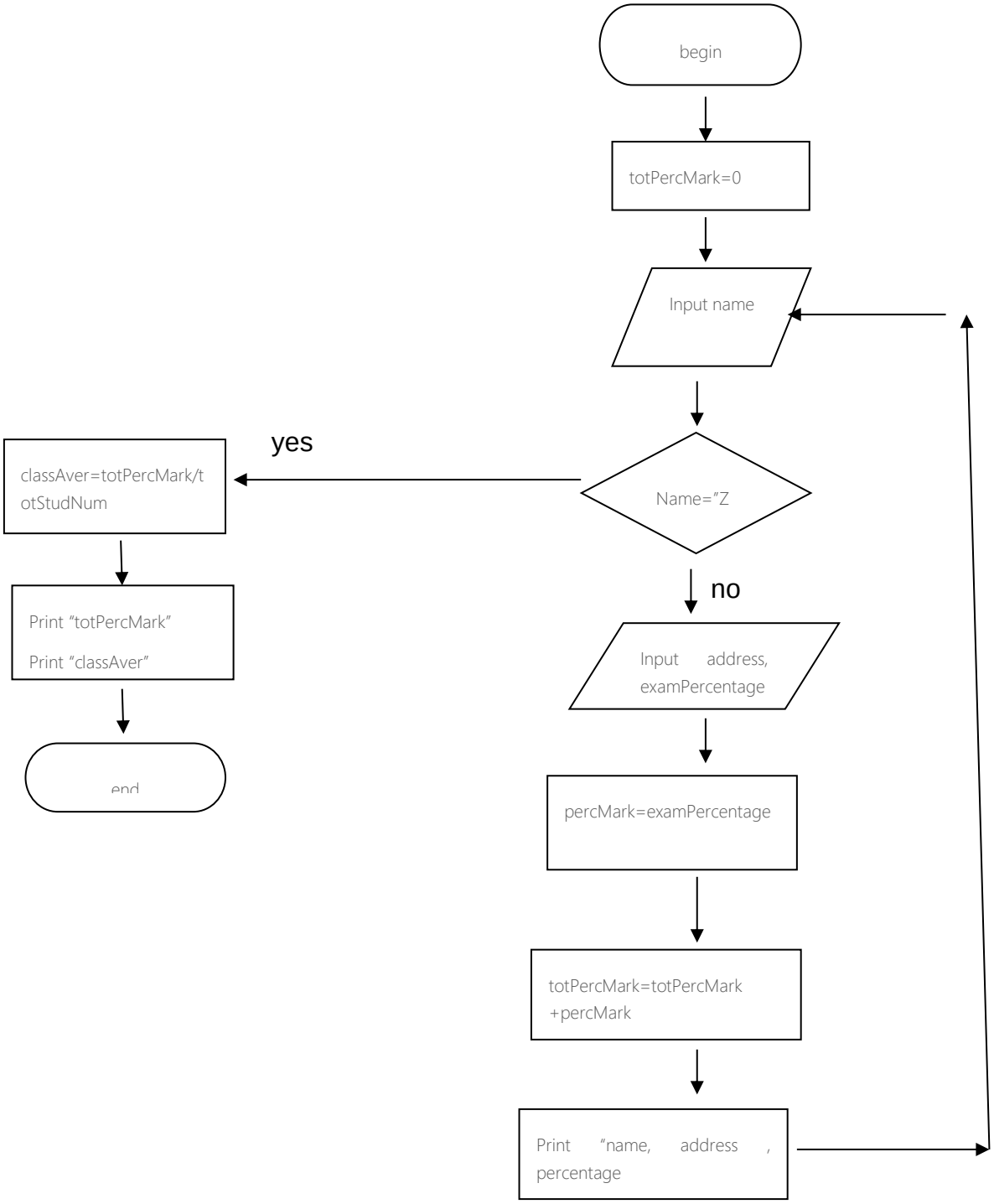
Write the pseudocode to represent the following. Also draw a program flowchart to support your solution:

a. Input: Input the name, address, and exam percentage of a students.
b. Process: Calculate the total percentage marks of all the students and the class average.
c. Output: For each student, print the name, address, and percentage. When a student name of "ZZZ" is input, print the total percentage marks and the class average.

ANSWERS

Begin

```
        totPercMark = 0
        input name
        while name != “ZZZ”
                input address, examPercentage
                percMark = examPercentage
                totPercMark = totPercMark +percMark
                print “name,address, percentage”
    endWhile
    input name
    if name = “ZZZ” then
        classAver = totPercMark/totStudNum
        print “totPercMark”; total percentage marks
        print “classAver”; class Average
   endIF
end
```



Question 2 (30)

Unit standard	*Specific outcome*	*Assessment criterion*
115392	*1*	*1*
	1	*2*
	6	*2*
115365	*2*	*1*
	2	*3*
	3	*1*
	3	*2*
	2	*2*

Write the pseudocode for a program that prompts the user to input the maximum temperatures recorded for a city, over the last two days, in degrees Fahrenheit (°F).

A function converts the temperatures to degrees Celsius (°C), and returns these values to the main program, which prints the temperatures in °C.

Another function is then called, which determines and prints a message stating which of the two days was the coldest, or if the temperature was the same.

The formula to convert °F to °C is: `C = 5 / 9 * (F - 32)`

ANSWERS

Begin

For x from 1 to 2

Input temperature (°F).

endFor

End

Function convert °F to °C

°C = 5/9 *(°F-32)

Print “temperature”; in °C

End

Function determine Coldest (temperature)

If temp1<temp2 then

temp1 =coldest

else temp2=coldest

msg “coldest”; coldest Temperature

endIf

end

Question 3 (35)

Unit standard	*Specific outcome*	*Assessment criterion*
115365	*1*	*1*
115392	*2*	*4*
	6	*2*
115362	*1*	*1*

A file called paymast.fle contains records, which have the following layout:

- employee number (5 digits, numeric)
- employee name (up to 40 characters)
- initials (up to 4 characters)
- gender (1 character)
- department code (2 characters)

- salary grade (2 characters)
- salary (numeric)

Write pseudocode for the logic to extract from paymast.fle all male employees whose salary is less than R1 500 and write the information to another sequential file called saltyp.fle.

Processing should continue until an employee number of 9999 is read at which point the contents of saltyp.fle must be printed out.

#Record

#rec= eNumber,eName,initials,gender,departmentCode,salaryGrade,salary

#endRecord

#Record

#rec=salary

#endRecord

Begin

Open paymast.fle for input

Open saltyp.fle for output

Read rec paymast.fle

While eNumber != 9999

Read gender from paymast.fle

Read salary from paymast.fle

If gender = m

Salary<R 1 500 then

Write rec to saltyp.fle

Close paymast.fle

Close saltyp.fle

Endif

Endwhile

Open saltyp.fle for input

Read rec from saltyp.fle

While not EOF

Print "rec"; all record contents

Close saltyp.fle

endWhile

End

Question 4 (22)

Unit standard	*Specific outcome*	*Assessment criterion*
115365	*1*	*2*
115392	*6*	*2*

A college has 50 students. Each student's name, address, and code must be input. The code can be either 1 or 2: code 1 = Correspondence, code 2 = Full-time. An error message must be printed if the user inputs a code that is not 1 or 2. Print out an address label for each student with a message indicating whether he/she is studying by correspondence or not. Determine and print out the total number of full-time students.

ANSWERS

```
Begin
totFullTime =0
input code
while code =1,2
      for X from 1 to 50
          input name, address
           code1 = correspondence
           code 2 = full-time
           totFullTime= totFullTime +1
                 if code =1
                    msg "correspondence"
                else msg "fulltime"
                 endIf
                print "address, name,msg"
```

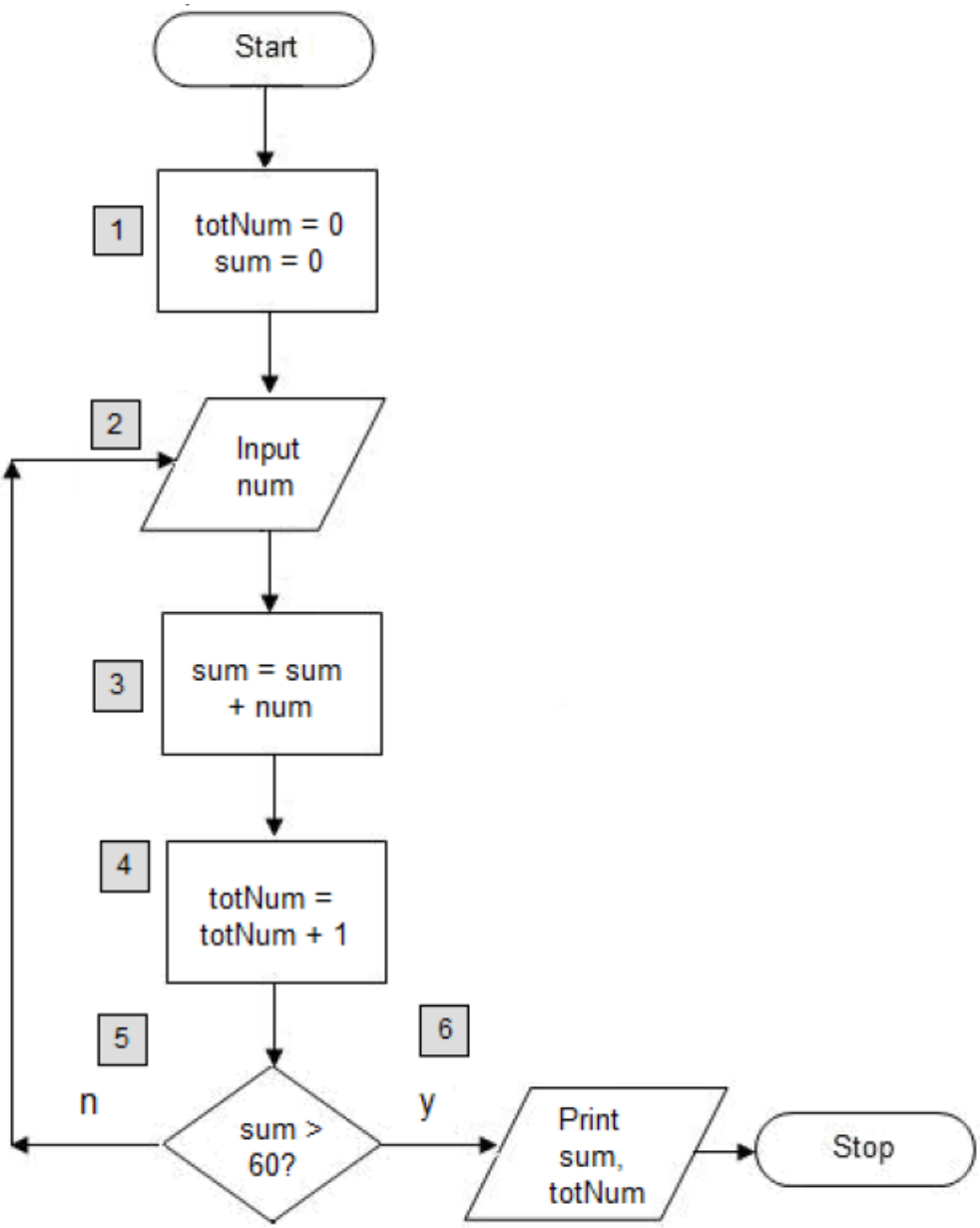
```
        endFor
endWhile
msg “invalid code”; please choose 1 or 2
print “totFullTime”
end
```

Question 5 (30)

Unit standard	*Specific outcome*	*Assessment criterion*
115367	*1*	*1*
	1	*2*
	1	*3*
	4	*2*
	4	*3*

Study the example in the figure below and draw a trace table. The following values havebeen input at box 2:

Num: 9, 23, 7, 14, and 11.


Start
1
totNum = 0
sum = 0
2
Input
num
3
sum = sum
+ num
4
totNum =
totNum + 1
5
6
n
y
sum >
60?
Print
sum,
totNum
Stop

Box No	Input num	totNumber	sum	Sum=sum +num	totNum=totNum+1	Sum>60?	Print "sum,totNum"
1		0	0				
2	9						
3				9			
4					1		
5						no	
2	23						
3				32			
4					2		
5						no	
2	7						
3				39			
4					3		
5						no	
2	14						
3				53			
4					4		
5						no	
2	11						
3				64			
4					5		
5						yes	
6							64 5

Question 6 (33)

Unit standard	*Specific outcome*	*Assessment criterion*
115392	*4*	*1*
	5	*2*
115365	*2*	*3*
115359	*2*	*3*

a. Identify and explain in detail the various testing techniques: (9)

b. Identify the types of documentation (5)

c. System installation and evaluation is the second part of the systems implementation phase. It describes the actual installation of the information system and its initial evaluation by the users. Discuss in detail the following aspects. (19)

   a. Environments
   b. Training
   c. Guidelines for developing in-house training sessions
   d. Data conversion

Referencing

Program Design Concepts

Mark allocation for student			
Section	Sub-section	Maximum Mark	Learner mark
Body of the report	Question 1	40	
	Question 2	30	
	Question 3	35	
	Question 4	22	
	Question 5	30	

	Question 6.a	9	
	Question 6.b	5	
	Question 6.c	19	
Deductions	1 day late	-5	
	2 days late	-10	
	3 days late	-15	
	Total:	180	

PRE-ASSESSMENT AGREEMENT

Assessment Preparation: Preparing the Candidate

Student name and surname	Tafadzwa Chiripanyanga	Date	4/18/2023
		Time	6pm
Assessor name and surname		Venue	online

How to prepare the candidate	Document Requirements	Agree (tick)	Action Required
Explain to the candidate why you are meeting and the purpose of the assessment.	Assessment Policy Assessment process	✓	
Discuss the assessment plan in detail.	Assessment strategy	✓	
Explain assessment process, show assessment instruments to candidate and describe assessment conditions.	Assessment instruments	✓	

Identify the role-players during assessment.	Assessors Moderator	✓	
Describe the evidence required to be declared competent.	Examples of evidence	✓	
Explain how evidence will be judged.	Mark allocation explained	✓	
Explain to the candidate how to prepare: Give candidate assessment task description.	Assessment task description	✓	
Confirm with the candidate what he/she should bring to the assessment.	Detailed briefing on exact requirements to be given to candidate in writing	✓	
Ensure that candidate understands the procedures of all assessment practices.	Appeals Policy Appeals procedure Assessment Policy Assessment Procedure Moderation Policy Moderation procedure Verification Policy Verification Procedure	✓	
Ask the candidate if he/she foresees any problems or identify any special needs.	List needs	✓	

Agreed Assessment Plan	
Student name and surname:	Tafadzwa Chiripanyanga
Assessor name and surname:	
Module name:	Programming Fundamentals
Unit Standard/s:	US115359 US115362 US115365 US115367 US115392
Type of Assessment i.e. Formative assignment, Formative test, Formative Practical, Summative etc.	Formative Assessment 2
Special Assessment Requirements:	N/A

Event	Date, time and location	Resources required	Evidence to be generated
Assessments due date		Assessments	Completed documentation
Complete activity on MyAIE and upload to MyAIE			Completed Portfolio of Evidence
Submit Portfolio of Evidence			

Assessor Roles and Responsibility	
Roles	Assessor Guide Feedback Agent Reviewer
Responsibilities	Consult candidate re-assessment, assessment process and plan. Agree assessment process and plan with candidate. Forward documentation to candidate: plan, guide and assessment instruments. Assess candidate with the use of different instruments. Provide feedback on assessment findings. Support candidate through assessment process. Source feedback from candidate on assessment process. Review assessment process and outcome. Use assessment process as opportunity to transform assessment activities and outcomes.

Candidate Roles and Responsibility	
Roles	• Leaner • Feedback agent • Reviewer
Responsibilities	• Be available for assessment. • Be actively involved in the consultative process. • Learn from the assessment process. • Provide feedback to the assessor in terms of the assessment as learning activity. • Provide feedback to the assessor on the efficacy of the assessment process.

	• Review own role and assessor role in the assessment process.
Assessment Instruments	• Portfolio of Evidence • Questionnaire • Report • Presentation • Reflexive questions • Work sample • Practical's • Group Activity • Research activities

Assessment Process	
• Evaluation of POE addressing Essential Embedded Knowledge in unit standards. • Evaluation of Research Projects and other evidence addressing specific unit standards. • Consultation: assessment plan and assessment activities and instruments. Pre-assessment moderation and interviews conducted at this stage. • Observation: feedback on assessment against specific outcomes, critical outcomes in unit standards. • Feedback: to candidate regarding sufficiency of evidence and possible interview to gain supplementary evidence. • Feedback to candidate regarding assessment findings as well as review process.	
Feedback	Written feedback to be given to all stakeholders at the end of the assessment process, as well as verbal feedback to the candidate during assessment activities.
Recording Process	Process and findings to be recorded and submitted for record keeping purposes as well as moderation and verification.
Review Process	The review process is the responsibility of the assessor and the candidate. Joint reviewing will take place after feedback has been given to the candidate.
Right to appeal	The candidate must be advised of the right to appeal.
Resources Required	Assignments • POE • Assessments • Guides
I confirm that: • I have been consulted on and have agreed to the training and assessment process as detailed in the assessment guide. • I have been advised of my right to appeal against any assessment that is unfair, unreliable, invalid or impracticable. • I have read and understood the appeal procedure.	

- I know that assessments may be moderated or verified by an external party.
- The purpose of the assessment has been clearly explained to me.
- The criteria have been discussed with me, and I know I will be assessed against these criteria.
- I know when and where I will be assessed, and I was given fair notice.
- I know how the assessment will be done, and any other requirements related to the assessment.

Signed: _tafadzwa_____ Date: ____4/18/2023_____

Overall Assessment Decision	Competent		Not yet competent	
Student's Signature			Date:	
Assessor's Signature			Date:	
Moderator's Signature			Date:	

ASSESSMENT FEEDBACK AGREEMENT

Assessment feedback: Feedback to learner

Qualification Name:	
Qualification SAQA Number:	
Subject Name:	Programming Fundamentals
Subject Code:	PRFU
Assessment Name:	Formative Assessment 2
Assessment Code:	PRFU_FA2
Assessment Type:	Formative

Feedback report	1st Attempt		2nd Attempt	
	C	NYC	C	NYC
Unit standard Number(s)				
US115359				
SO2, AC3				
US115362				
SO1, AC1				
US115365				
SO1, AC1				
SO1, AC2				
SO1, AC3				
SO1, AC4				
SO1, AC5				
SO2, AC1				
SO2, AC2				
SO2, AC3				
SO3, AC1				
SO3, AC2				
US115367				
SO1, AC1				

SO1, AC2				
SO1, AC3				
SO1, AC4				
SO4, AC2				
SO4, AC3				
US115392				
SO1, AC1				
SO1, AC2				
SO2, AC2				
SO2, AC4				
SO3, AC2				
SO4, AC1				
SO4, AC2				
SO4, AC3				
SO5, AC1				
SO5, AC2				
SO6, AC2				

General feedback to learner (Attempt 1) Supply comprehensive feedback why learner is found NYC

Learner Number:	258196		
Learner name and surname:	Tafadzwa Chiripanyanga	Date:	4/18/2023
Learner Signature:	*tafadzwa*		
Lecturer name and surname:		Date:	
Lecturer Signature:			
Assessor name and surname:		Date:	
Assessor Signature:			
Moderator name and surname:		Date:	
Moderator Signature:			

Note to learner
Review the feedback provided by your lecturer to check that you have been found competent in this assessment. If there are any areas where you have been found not yet competent, you must redo those parts of the assessment and resubmit within the stipulated time frame. The section below will only be completed in cases where the learner was asked to resubmit parts of the assessment where they were found not yet competent.

General feedback to learner (Attempt 2)

Supply comprehensive feedback why learner is found NYC

Learner Number:	258196		
Learner name and surname:	Tafadzwa Chiripanyanga	Date:	4/18/2023
Learner Signature:	*tafadzwa*		
Lecturer name and surname:		Date:	
Lecturer Signature:			
Assessor name and surname:		Date:	
Assessor Signature:			
Moderator name and surname:		Date:	
Moderator Signature:			