



Computer Science 3B

Practical Assignment 01

Assignment date:

2024-07-25

Deadline

2024-07-25 17h05

Marks: 50

This practical assignment must be uploaded to eve.uj.ac.za **before** 2024-07-25 17h05. Late¹ or incorrect submissions **will not be accepted**, and will therefore not be marked. You are **not allowed to collaborate** with any other student. Plagiarism is not tolerated. All submissions are tested for plagiarism.

Good coding practices include a proper coding convention and a good use of commenting. Marks will be deducted if these are not present.

The reminder page includes details for submission. Please ensure that **ALL** submissions follow the guidelines. The reminder page can be found on the last page of this practical.

Pleased with your previous solution, the **BeatWatch** has a new task for you. One of the important calculations when tracking fitness is distance traveled. While step distance (stride) is usually measured in centimeters, fitness distance is measured in kilometers.

Write an **80x86** assembly program that will calculate the fitness distance of given the step distance and number of steps. The formula is as follows:

$$\text{distanceMeters} = \frac{(\text{stride} * \text{stepcount})}{100} \quad (1)$$

$$\text{distanceKilometers} = \frac{\text{distanceMeters}}{1000} \quad (2)$$

where

stride Stride length in cm (input value provided by user)

step count Number of steps (input value provided by user)

distanceMeters Distance in meters

distanceKilometers Distance in kilometers

You are only allowed to create global variables for the terms specified above (i.e. no temporary variables) and string prompts for the user interface. Your program must ask the user each of the input values (*stride* and *step count*) display the **complete** result. **Note:** Currently you only have access to output (display) strings, input integers and output integers!

¹Alternate arrangements for exceptional circumstances will be posted on eve.

Testing set - Use these values to test your program:

Stride	Steps	Distance meters	Distance kilometers ²
92	8999	8279.08	8.27908
115	9649	11096.35	11.09635
70	11346	7942.2	7.9422
130	9018	11723.4	11.7234
82	12325	10106.5	10.1065

Mark sheet

- | | |
|--|------|
| 1. Design | [05] |
| 2. Input | [05] |
| 3. Calculation | [05] |
| 4. Display | [05] |
| 5. Structure and layout (no temporary variables, correct data types) | [05] |
| 6. Commenting | [05] |
| 7. Correct execution. | [20] |

NB

Submissions which **do not assemble** will be capped at 40%!

Practical marks are awarded subject to the student's ability to explain the concepts and decisions made in preparing the practical assignment solution.

(Inability to explain code → inability to be given marks.)

Execution marks are awarded for a correctly functioning application and not for related code.

²The output from your program will not be the same as values shown here!

Reminder

Your submission must follow the naming convention below:

SURNAME_INITIALS_STUDENTNUMBER_SUBJECTCODE_YEAR_PRACTICALNUMBER

Example: Berners-Lee_TJ_209912345_CSC03B3_2024_P01

Surname	Berners-Lee	Module Code	CSC03B3
Initials	TJ	Current Year	2024
Student number	209912345	Practical number	P01

Your submission must be **a single zip (compressed) file!**

Your submission must include the following:

File	Naming	Folder	Purpose
Design	STUDENTNUMBER_P01.pdf	docs	Contains your program design. All files must be in PDF format. Your details must be included at the top of any PDF files submitted ⁰ .
Source	STUDENTNUMBER_P01.asm	src	Contains all relevant source code. Your details must be included at the top of the source code ⁰ .

Multiple uploads

Note that only **one** submission is marked. If you already have submitted once and want to upload a newer version then submit a newer file with the same name as the uploaded file in order to overwrite it.

⁰Failure to correctly indicate your details will result in a penalty.