



## Computer Science 3B

### Practical Assignment E2

Assignment date:

2024-10-14

Deadline

2024-10-18 17h05

Marks: 100

---

This practical assignment must be uploaded to [eve.uj.ac.za](https://eve.uj.ac.za) **before** 2024-10-18 17h05. Late<sup>1</sup> or in-correct 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.

---

Write an 80x86 assembly DLL. **No design is required!** The DLL will contain the following functions:

```
1 // Converts the string representation of a binary number to decimal
2 // Max length of the string is 8 but can be shorter
3 // e.g. "00000101" = 6
4 int binStringToDecimal(char* binString);
5
6 // Converts the string representation of a hexadecimal number to decimal
7 // Max length of the string is 4 but can be shorter
8 // e.g. "00A5" = 165
9 int hexStringToDecimal(char* hexstring);
```

If a string does not contain valid characters, return **-1**

Binary strings can only contain **0** or **1**

Hexadecimal strings can only contain **0 - 9, A - F**

**Important** - Do not modify the string!

## Important

The following has been provided under additional files for this practical:

- DLL template code
- Executable that will use your DLL (use this executable to test your program)

---

<sup>1</sup>Alternate arrangements for exceptional circumstances will be posted on eve.

## Mark sheet

Marks are based on how well does each function in your DLL works based solely on output.

1. *binStringToDecimal* function [50]
2. *hexStringToDecimal* function [50]

## 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.

## Reminder

Your submission must follow the naming convention below:

SURNAME\_INITIALS\_STUDENTNUMBER\_SUBJECTCODE\_YEAR\_PRACTICALNUMBER

**Example:** Berners-Lee\_TJ\_209912345\_CSC03B3\_2024\_PE2

|                       |             |                         |         |
|-----------------------|-------------|-------------------------|---------|
| <b>Surname</b>        | Berners-Lee | <b>Module Code</b>      | CSC03B3 |
| <b>Initials</b>       | TJ          | <b>Current Year</b>     | 2024    |
| <b>Student number</b> | 209912345   | <b>Practical number</b> | PE2     |

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

Your submission must include the following folders:

| File   | Naming     | Folder | Purpose   |
|--------|------------|--------|---|
| Source | PE2.dll    | src    | Contains your DLL file created for this assignment.   |
| Source | PE2DLL.asm | src    | Contains all relevant source code. Your details must be included at the top of the source code <sup>0</sup> . |

## 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.

---

<sup>0</sup>Failure to correctly indicate your details will result in a penalty.