

NET103 COURSEWORK

Part 1, 2015/16

You are expected to work in pairs for this piece of coursework and perform all the following tasks:

- First, write a subroutine that will triple a given value using repeated addition. Please use the instructions JNS and Jmpl for the subroutine and return the result on a memory address.
- Then write another subroutine that will divide two numbers using repeated subtraction. For example, to divide 20 / 5, you would need to subtract 20 – 5 and keep subtracting 5 from the difference, until you reach 0 or a negative number, noting the number of subtractions that took place. The number of subtractions (in our example, 4) will be the quotient of the division. Assume you are only using positive numbers for the division. Please use the instructions JNS and Jmpl for the subroutine and return the result on a memory address.
- Finally, write a MARIE assembly program (using the subroutines) to allow the user to enter four grades, A, B, C, and D. Assume that the last grade, D, counts three times as much as the first three. Display the overall sum after taking into account the increased weight of the last grade ($\text{sum} = A + B + C + 3 * D$) and the average ($\text{sum} / 6$).
- Please see the pseudocode below:

```
Input A
Input B
Input C
Input D
Call subroutine to triple D
sum=A+B+C+3*D
Call subroutine to divide sum / 6
Output result
```

As an extension, you can check whether grades A, B, C, and D are positive numbers, and between 0 and 100.

You are reminded of the University's rules on academic misconduct. It is *not* acceptable to simply copy and paste material from other sources.

Submission Information:

- You are asked to submit a single Zip file (.zip) containing the MARIE Assembly .mas file that corresponds to the above tasks. Your .mas file needs to be able to compile on the MARIE Assembler Code Editor and subsequently run on the MARIE Simulator.
- Your .mas file is expected to contain comments that explain your code.
- This coursework is issued on **9th March 2016**.

- Please email maria.papadaki@plymouth.ac.uk about your group composition by **24th March 2016**. Groups will be automatically assigned after this date. Groups composition to be annou
- **The Zip file containing the assembly code file must be submitted by 20th May 2016, 5pm.**
- Coursework must be submitted by the specified deadline online via the DLE module website.
- You should give due consideration to your personal time management to ensure that coursework is submitted in plenty of time prior to the deadline. The University cannot take any responsibility for late submission due to slow network speeds, etc.
- Coursework can be submitted at any time ahead of the deadline time. Please note that coursework, which is submitted after the deadline date and time will be capped at the minimum pass mark within the first 24 hours of the deadline and will be awarded a mark of zero if submitted more than 24 hours late.
- Extensions to deadlines for submission of coursework may not be granted by members of academic staff. A student who misses a deadline or believes that he or she will miss a deadline due to circumstances beyond her/his control should submit extenuating circumstances in accordance with these Regulations.

Assessment Criteria:

Accuracy of results (40%)

Does the .mas file compile and run on the MarieSim environment? Does the code produce accurate and expected results according to the documentation and the range of values?

Functionality and efficiency (30%)

Does the code contain all requested functionality? Can it detect and deal with user errors and unexpected user input (i.e. input of negative numbers, or numbers larger than 100)?

Documentation and commenting (30%)

Documentation should be included as comments in the .mas file to specify the intended execution of the code. This is particularly important in the case of errors and incorrect results. Also, the documentation should specify the range of values the programme can work with.