CSC236 On Campus and Distance Education - Spring 2012
Basic Computer Organization And Assembly Language Programming

1.0 Actions To Be Taken Immediately After The First Lecture
- Read this syllabus and the CSC236 Calendar which contains due dates for assignments.
- Get the CSC236 Class Notes course package which is available at the NCSU bookstore and online.
- Complete and submit HW0.
- Install DOSBox and the development tools.
- Retrieve the automated homework generator program and generate the homeworks HW1 - HW4.

2.0 Prerequisites
The prerequisite for this class is a C- in CSC214 or CSC216.

3.0 Instructor
Mr. Dana Lasher Phone: 515-7890 Email: lasher@ncsu.edu Office: 2296-EBII
Office hours are posted on the WEB.

How to get help
Send technical questions to: csc236-sup@wolfware.ncsu.edu
Do not send programs or attachments via email.
Submit items you want us to look at to the ask4help locker.

4.0 Course Topics
This course explains what happens beneath High Level Languages such as C++ and Java. It covers the history of computing, number systems, Von Neumann architecture, instruction sets, machine code, assembly language programming, program testing, compilers, logical operations, microprogramming and interrupts. It includes a detailed study of a contemporary processor, the Intel x86 family.

5.0 Course Objectives
By the end of the course, students will be able to:
- Add and subtract and convert, signed and unsigned integers, using bases 2, 10 and 16.
- Enumerate the functional components of a computer; explain trade-offs in computer design as they relate to cost and function and performance; outline computer architectural enhancements beyond the Von Neumann model.
- Explain the basic operation of interrupts and microcode.
- Program in assembly language and link assembler subroutines with a High Level Language.
- Convert symbolic assembler code into machine code and convert machine code into symbolic assembler code.
- Explain the basic operation of the Java Virtual Machine and Java Bytecode.

6.0 Information On The Web And Information Sent To Your NCSU Email Account
- Grading messages are sent to your NCSU email account. You must check that account regularly.
- The WEB site is: http://courses.ncsu.edu/csc236/

7.0 Text And Lectures
- The CSC236 Class Notes course package is the text. It is at the NCSU bookstore and on the WEB site.
  It contains a detailed set of lecture notes and reference information for programming the Intel 8086 processor.
- For Distance Students the course content is delivered via video lectures which are viewed on the WEB.
8.0 General Grading Policies

Our grading policies have these goals.

- Emphasize that in the business world products need to be delivered on time.
- While in the learning mode, allow students to recover from the pressures of life that create difficult situations.
- There should be no surprises in the grade a student receives for an assignment.

Preparing for the open book tests

- Our open book tests measure your ability to use the information taught. They may contain new types of questions that require you to apply your knowledge. To prepare, you must take as many old tests as you can. Studying old tests is considered an integral part of the learning process. Consider the old tests as a set of examples and an extension of the notes.

What is a milestone day and when are assignments due.

- Noon on a Tuesday or Thursday is defined as a milestone day and milestone days determine late penalties and early bonuses. Milestone days are used even if there is not a class scheduled on that day.
- The due dates for all assignments are given in the CSC236 Calendar and all assignments are due at noon.

Self grading assignments.

- Most assignments are self-grading. You will know your grade when you submit the assignment.
- All grade recording is automated, therefore, incorrect or forgotten submissions cannot be processed and your assignment will be considered late.
- You must correctly electronically submit the required file on time. An assignment is considered complete at the time that the correct file, specified in the assignment handout, is submitted to the assignment’s submit locker. The submit time stamp is the time used to determine any bonus or penalty.
- You may re-submit any assignment as long as the submit locker is open. We will record the last grade submitted.

Special problems.

- If you have extenuating circumstances that may warrant an extension, contact the instructor before the assignment is due to request alternative arrangements. Do not wait until after an assignment is due to bring up special situations.

| This Grade Table lists the graded components of the class and their value toward a course grade |
|---|---|---|
| 55% | Two open book tests and a final. Lowest counts 15 and the other two count 20 each. You may use notes and books. You may not use any form of calculator or computer. |
| 9% | HW0 - HW8 homeworks | not accepted late | no bonus for early submission |
| 2% | TOOLS homework | not accepted late | no bonus for early submission |
| 2% | KEY homework | accepted late with penalty | bonus for early submission |
| 2% | FLOAT homework | accepted late with penalty | bonus for early submission |
| | There are three programs (P1, P2, P3) each worth 10 points toward the course grade. P1 is broken into two parts (part A is worth 2 points and part B is worth 8 points). P2 is broken into two parts (part A is worth 4 points and part B is worth 6 points). |
| 2% | P1A - PARSE - DESIGN | not accepted late | no bonus for early submission |
| 8% | P1B - PARSE - ASM | accepted late with penalty | bonus for early submission |
| 4% | P2A - DCOMP - GETBIT | accepted late with penalty | bonus for early submission |
| 6% | P2B - DCOMP - DECOMPRESS | accepted late with penalty | bonus for early submission |
| 10% | P3 - MAZE | accepted late with penalty | bonus for early submission |
| **100%** | **Total points for all work** |

The course grade is composed of 100 potential points, and is mapped into a letter grade.

| A+ = 97.0 - 100 | A = 93.0 - 96.9 | A- = 90.0 - 92.9 |
| B+ = 87.0 - 89.9 | B = 83.0 - 86.9 | B- = 80.0 - 82.9 |
| C+ = 77.0 - 79.9 | C = 73.0 - 76.9 | C- = 70.0 - 72.9 |
| D+ = 67.0 - 69.9 | D = 63.0 - 63.9 | D- = 60.0 - 62.9 |

C- is required for S
D- is required for AU
9.0 Tests
If you must miss a test, contact the instructor before the test to get agreement. For example you are going on a trip. In emergency situations contact the instructor as soon as you return to school. Illness must be certified by a physician in writing. Make-up tests are only given for university excused absences.

The options for taking tests for Distance Students are described on the web.

10.0 Late Work Policy
- These assignments are not accepted late: HW0-HW8, TOOLS, P1A which is the program 1 design work. The lockers for these assignments close at noon on the assignment's due date.
- These assignments are accepted late: KEY, P1B, P2A, P2B, P3, FLOAT. Noon on Tuesday or Thursday is defined as a milestone day. Milestone days are used even if there is not a class scheduled on that day. The listed work is accepted up to noon on the 4th milestone day after the due date, but not after noon on the day of the last lecture. The penalty is: Up to noon, 1 milestone day late is -15. Up to noon, 2 milestone days late is -30. Up to noon, 4 milestone days late is -35.
- For the assignments P1B, P2A, P2B, P3 each student is allowed 1 un-excused late milestone day submission, normally -15 points, without penalty. This allows you to submit 1 milestone day late and not be charged the penalty. This waiver is activated automatically the first time you submit a program (P1B, P2A, P2B, P3) late. If the original grade is greater than 65 then we activate the waiver and calculate: grade = original grade - (late_penalty - waiver). After that calculation, if the grade was reduced below 65 then we bring the grade back up to 65. The waiver is not used for KEY; it is only used for one of the programs P1B, P2A, P2B, P3. The previous procedure is the only way the waiver is applied.
- The late penalty will not be used to drop a grade below 65.
- The last time any work will be accepted for grading is noon on the day of the last lecture ... Noon Thursday 04/26/2012.

11.0 Early Submission Bonus
- These assignments are eligible for the early submission bonus: KEY, P1B, P2A, P2B, P3, FLOAT. If submitted before noon at least one milestone day before its due date they are awarded 10 extra bonus points. Thus a grade on these assignments can reach 110.
  (A program due noon Tuesday must be submitted by noon on the prior Thursday to get the bonus.
  A program due noon Thursday must be submitted by noon on the prior Tuesday to get the bonus.)

12.0 Homeworks HW1-HW8
Running the homework program requires a 16 bit DOS box. The DOSBox environment is recommended.

HW1-HW8 are generated and graded on your own computer.
- They are turned in electronically using the WolfWare Submit facility.
- The only item submitted is the hwsSubmit.txt file created by the grading program.

If you caused a problem in submitting HW1-HW8 (e.g. you submitted the wrong file, you submitted to the wrong locker), but we judge that you had completed and made a reasonable effort to submit the homework on schedule, then we will enter the homework grade manually with a 15-point penalty deduction.
13.0 Rules Relating To Academic Integrity

- Do not plagiarize another person’s work.
- Do not give your work to another person, even after the course is over. Do not post your work on a public web site. We periodically reuse programs and you are responsible if someone submits your program even in a later term.
- Do not get help from anyone outside the class; for example do not post assignments or request help from technical web sites.
- The minimum penalty for any cheating incident is -100 on the assignment.
- The same penalty applies for the person that provided the plagiarized work.
- Any intentional attempt to circumvent the automated grading process is considered an academic integrity violation.
- All incidents are reported to the Office of Student Conduct.

This course has two different environments for assignments. The calendar lists the designation for each assignment.

Individual assignments.
- You must work completely alone on these assignments, except for help from the TA or instructor.
- Do not discuss the assignment with anyone. Do not work with anyone else on design or coding. Do not give or take ideas on how to solve the problem; clever ideas and a good design lead to higher grades on the programs and those higher grades are only due the person who thought up the design ideas. Do not jointly write any assembler instructions. Do not give or receive any actual assembler code. Do not give or receive program listings. All instructions you submit, must have been designed, developed and written yourself.

Team assignments. (Team participation is optional.)
- To participate on a team, you must have earned a passing grade on KEY and program 1.
- If you have a passing grade on KEY and program 1, you may select one student who is enrolled in this class to form a team. A two-person team is treated as a single unit. You may communicate within the team and share ideas and code.
- The names of both team members must appear in the owner field of the program header.
- Create a single xxx.ans file that is submitted by both members of the team to their respective submit lockers.
- Communication outside the team is not permitted and is subject to the same restrictions as individual assignments.

14.0 Programs, Key and Float Assignments

14.1 The development software requires a 16 bit DOS box. The DOSBox environment is recommended.
14.2 Treat each program as if you worked for a company and this was your project.
    Only do what would be considered reasonable for a real business program.
14.3 Do not circumvent the automated grading process. Examples include: fake documentation; tuning your program for the grading system's specific test cases; any manual intervention during the running of the grading system batch files. Any intentional attempt at circumventing the automated grading process is an academic integrity violation.
14.4 Do not use any form of automated code generation such as .if statements, macros, high-level languages, etc. You must write every assembler instruction and each must map directly to one machine code instruction.
14.5 Programs must only use 8086 instructions and the small memory model (directives .8086 and .model small).
14.6 Programs must adhere to the documentation requirements that are specified on the WEB. Your documentation must be meaningful. Whether or not you consider documenting a program as a useful function, you must act professionally and provide useful documentation. Do not just write words to fill space. The instructor may manually re-grade the documentation for a submitted program. If you are informed that the grade has been changed, you may update the documentation and re-submit the program, however, any late penalty will apply to the new submission.
14.7 Documentation and efficiency are only graded and given points after the program passes the functional tests.
14.8 If a grading system defect assigns your program the wrong grade then the program will be re-graded manually. You have one week from the time you are notified to resubmit your program. During that week, no additional late penalty will be applied. This late waiver does not apply to intentional actions to circumvent the grading system or documentation.
14.9 Any design information, algorithms, model high-level language code, model assembler code provided is only meant to show functionality and not efficiency. Assembler code efficiency is the responsibility of the coder.
14.10 The submit time stamp is the time used to determine any bonus or penalty.

Do not edit or modify or erase any of the grading system files. The file you submit for KEY, FLOAT and the Programs is named xxx.ans where xxx is the assignment name. That file is created by the grading system. No other file is acceptable.
Incorrect submissions will result in your program not being graded and considered late.

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15.0 Notes On Using The WolfWare Submit Facility

- Do not get confused by the dates you see in the WolfWare system. The heading on the WolfWare submit block is "Date Assignment Closes". This is not the due date. This is after the due date to allow students to submit assignments late with a penalty. The due dates for work, without a penalty, are the dates in the CSC236 Calendar.

- If you have any problem with the submit process, including getting a grading system message stating you had an incorrect submission, then before you request that the late penalty be waived, answer these two questions.
  1. Were the instructions that specified what to submit and when to submit clear?
  2. Was the error caused by your actions?
   If the answer to both questions is "yes" then please do not request the penalty be waived.
   If the answer to either is "no" then send an email with an explanation.

16.0 Help From The Staff

- Send all technical questions to: csc236-sup@wolfware.ncsu.edu
- We try to answer email questions over the weekend but that is not guaranteed.

Our open book tests measure your ability to use the information taught. They may contain new types of questions that require you to apply your knowledge. To prepare, you must take as many old tests as you can. Studying old tests is considered an integral part of the learning process. Consider the old tests as a set of examples and an extension of the notes.

16.1 help with old test questions and homeworks

- Limit the number of questions to 2 per email and copy the whole question into the email.
- You explain how you answered the question. We will indicate which step in your process was incorrect.

16.2 help with programs

- Have a design that can be sent electronically. Before looking at your assembler code, we look at your design to determine if you have a reasonable solution.
- Have line comments and block headers in the code that tell what the code is intended to do.
- If the problem is a bug, have one simple test case that fails; the actual output from your code and the expected output.
- Submit all items to the ask4help assignment submit locker.
- Send an email to the support group with a concise explanation of the issue to be resolved.

17. Disability Accommodations

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. Students registered with Disability Services should present their letters of accommodations to the instructor prior to the end of the first week of classes.