CSC234/CSC236 Distance Education - Summer 2010
Basic Computer Organization And Assembly Language Programming

1.0 Actions To Be Taken Immediately After The First Lecture

- Read this syllabus and the CSC234/CSC236 Calendar which contains due dates for assignments.
- Get the CSC234/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.
- In the summer term we have 10 weeks to cover the same material covered in the 16 week fall and spring terms. If a student falls behind in the summer, it is hard to recover. The technical content and assignments are demanding. So please assure that you have scheduled your summer time so that you can successfully complete CSC23x.

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 posted on the WEB.

Send technical questions to: csc234-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/csc234/

7.0 Text And Video Lectures

- The CSC234/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.
- Content of the courses is delivered via a set of video lectures that are viewable 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.

What is a class day and when are assignments due.
- Noon on a Tuesday or Thursday is defined as a class day and class days determine late penalties and early bonuses.
- The due dates for all assignments are given in the CSC234/CSC236 Calendar and all assignments are due at noon.

Self Grading.
- 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

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<tr>
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<tbody>
<tr>
<td>55</td>
<td>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 <strong>not</strong> use any form of calculator or computer.</td>
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<tr>
<td>9</td>
<td>HW0 - HW8 homeworks</td>
<td>not accepted late</td>
</tr>
<tr>
<td>2</td>
<td>TOOLS homework</td>
<td>not accepted late</td>
</tr>
<tr>
<td>4</td>
<td>KEY homework</td>
<td>accepted late with penalty</td>
</tr>
<tr>
<td>2</td>
<td>P1A - ROMAN - DESIGN</td>
<td>not accepted late</td>
</tr>
<tr>
<td>8</td>
<td>P1B - ROMAN - ASM</td>
<td>accepted late with penalty</td>
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<tr>
<td>4</td>
<td>P2A - FOURIER - COSINE</td>
<td>accepted late with penalty</td>
</tr>
<tr>
<td>6</td>
<td>P2B - FOURIER - TRANSFORM</td>
<td>accepted late with penalty</td>
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<tr>
<td>10</td>
<td>P3 - LIFE</td>
<td>accepted late with penalty</td>
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<tr>
<td><strong>100</strong></td>
<td><strong>Total points for all work</strong></td>
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The course grade is composed of 100 potential points, and is mapped into a letter grade.

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<tr>
<td>A+ = 97.0 - 100</td>
<td>A = 93.0 - 96.9</td>
<td>A- = 90.0 - 92.9</td>
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<tr>
<td>B+ = 87.0 - 89.9</td>
<td>B = 83.0 - 86.9</td>
<td>B- = 80.0 - 82.9</td>
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<td>C+ = 77.0 - 79.9</td>
<td>C = 73.0 - 76.9</td>
<td>C- = 70.0 - 72.9</td>
</tr>
<tr>
<td>D+ = 67.0 - 69.9</td>
<td>D = 63.0 - 63.9</td>
<td>D- = 60.0 - 62.9</td>
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9.0 Options For Taking Tests In The Summer

1. You may schedule your own individual test time using the Local Distance Education Proctor's Office.
2. You may take a test with your own remote proctor.

See the web for full details on taking tests: HomePage -> Calendar -> When, Where and How You Take Exams

If you must miss a test, then speak with the instructor before the test to get agreement, for example you are going on a business trip. In emergency situations contact the instructor as soon as possible. Illness must be certified by a physician in writing. Make-up tests are only given for university excused absences.
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. Noon on Tuesday or Thursday is defined as a class day. They are accepted up to noon on the 4th class day after the due date, but not after noon on the last day of class. The penalty is: Up to noon, 1 class day late is -15. Up to noon, 2 class days late is -30. Up to noon, 4 class days late is -35.
- For the assignments P1B, P2A, P2B, P3 each student is allowed 1 un-excused late class day submission, normally -15 points, without penalty. This allows you to submit 1 class 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 that any work will be accepted for grading is noon on the last day of class.

11.0 Early Submission Bonus

- These assignments are eligible for the early submission bonus: KEY, P1B, P2A, P2B, P3. If submitted before noon at least one class day before its due date they are awarded 10 extra bonus points. (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 Rules Relating To Academic Integrity

- Do not plagiarize another student's work. Do not give your work to another student, even after the course is over. We periodically reuse programs and you are responsible if someone submits your program in a later term.
- 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 three 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.

Consultation assignments. (Consultation participation is optional.)

- You may select one other person with whom you may consult (seek advice) during program development. This includes discussing design ideas on how to solve the problem and giving and receiving debugging help.
- Enter the name of your consultant in the program header.
- You may not do any of the following: jointly write any assembler instructions; give or receive any actual assembler lines of code; give or receive program listings; give or receive any comments (header, block comments, line comments).
- All lines of code (including data, instructions and comments) you submit, must have been written totally by 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.
13.0 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 hws提交.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.

14.0 Programs And The Key Assignment

- The development software requires a 16 bit DOS box. The DOSBox environment is recommended.
- 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.
- 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.
- 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.
- Programs must only use 8086 instructions and the small memory model (directives p8086 and model small).
- Programs must adhere to the documentation requirements that are specified on the WEB.
- Documentation and efficiency are only graded and given points after the program passes the functional tests.
- 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 does not apply to intentional actions to circumvent the grading system.
- 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 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.
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 CSC234/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: CSC234-sup@wolfware.ncsu.edu
- We try to answer email questions over the weekend but that is not guaranteed.

Our 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

- 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 comments in the code that tell what the code is intended to do.
- Have one simple input test case that fails; the actual output produced by your code and the expected output.
- Submit the three items above to the ask4help assignment submit locker.
- Send an email to CSC234-sup@wolfware.ncsu.edu with a concise explanation of the problem.

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.