McGill

April 2010
Final Examination

Introduction to Software Systems

COMP-206

April 20, 2010 at 9:00 – 12:00

Examiner: Joseph Vybihal Assoc Examiner: Greg Dudek

Student Name:		**McGill ID:**									

INSTRUCTIONS:

- This is a **CLOSED BOOK** examination.
- You are permitted **TRANSLATION** dictionaries ONLY.
- **STANDARD CALCULATOR** permitted ONLY.
- This examination is **PRINTED ON BOTH SIDES** of the paper
- This examination paper **MUST BE RETURNED**
- You are permitted to write your answers in either **English or French**
- Write your answers in the **exam booklet** providedd
- Attemp all questions, **part marks** will be assigned, show your work.

Grading

Section	Grade	Your Mark
Question 1: Code Repositories	25	
Question 2: HTML and CGI	25	
Question 3: C	25	
Question 4: Python	25	
Total	100 %	

Question 1: Code Repositories (25 points)

Answer the following questions about source code repositories:

i. Name the source code repository you would use if you do not want to have a centralized repository on a common server.
ii. In short, describe how a team would use the source code repository you identified in (i).
iii. Using any command-line centralized source code repository running on a common server, show the command-line commands you would use to setup the following source code repository: "a team of 3 programmers need to work on a software project that will have 5 source files. Each team member is in charge of one source file: a, b and c. Two team members are in charge of a common source file: d. All the team members can edit the main source file: e. You want the program to restrict access to the source files." Assume a group has already been created for them called x. One team member will create the repository for the team.
iv. Using the same command-line centralized source code repository you selected for (iii), show the Unix and repository command-line commands you would use to answer the following continuation question: "each team member has their own private account on the same server. How would you recommend your team manage, compile, run/test and integrate their code while they are in the process of developing the solution program". You can use some sentences to connect the commands you show, but the questions is looking for command-line commands.

How it will be graded:
Questions (i-iii) are each worth 6 points.
Question (iv) is worth 7 points.

Question 2: HTML and CGI (25 points)

Create a catalog web page that displays 5 items with quantity text boxes, user name and password text boxes, and a submit button with HTML, CGI and CSS.

More specifically: Create a well-structured HTML file with header and body sections. The header section will define a comment that will identify the purpose of the web page at the top of the browser identification line. The body's background color will be in blue. A table containing 5 data rows and one title row for each column. The table has four columns: "Part Number", "Part Name", "Unit Cost" and "Quantity to Buy". The table is embedded within a form that will use POST to send the information the user inputs. The "Quantity to Buy" column has text box fields, one for each row of the table. They are initialized to zero and they allow the user to input a maximum of 2 digits. Modify how the table displays using CSS. The column titles should be in "Times Roman" using a font size of 12. The data rows should all be in "Arial" size 10. The table's rows should alternate from light-gray and dark-gray rows. The form calls a python script called VERIFY.PY.

How it will be graded:

4 points – HTML layout	7 points – CSS	5 points – Table
4 points – CGI layout	5 points – CGI Commands	

Question 3: C Programming (25 points)

Assume you are given the following main program and struct:

```
struct NODE
{
      int number;
      struct NODE *next;
};

int main(int argc, char *argv[])
{
      struct NODE *head = NULL;
      int key;

      head = createLinkedList(argv[0]); // pass file name

      printf("Input a number to delete: ");
      key = atoi(gets());
      while(key >= 0)
      {
            head = deleteNode(key,head);

            printf("Input a number to delete: ");
            key = atoi(gets());
      }

      displayNumbersInList(head);
}
```

Write the complete code for the three functions: createLinkedList, deleteNode and DisplayNumbersInList. Assume the text file is a valid list of positive numbers of unknown quantity. Each number exists on one line of the text file.

How it will be graded:

5 points – Struct usage	5 points – deleteNode
5 points – Function usage	5 points – displayNumbersInList
5 points – createLinkedList	

Question 4: PYTHON Programming

Examine the following python program. What does it print? Document it line-by-line. (Be sure to read the code carefully.)

```
ugh = ([['one', 'berry'], ['two','vanilla']], [['three', 'foo'],
['bar']],[['fun','fun','fun'],['e']])

flavor="vanilla berry vanilla berry"
s=flavor.split()
for nn in range(0,20):
 for r in ugh:
  m=r[0]
  n=len(m)
  for offset in  range(n,len(s)-n+1):
    rest=s[len(s)-offset:]
    s = s[0:len(s)-offset]
    fail=0
    for p in range(0,n):
          try:
             if s[-p-1]!=m[-p-1]:
                 fail=1
                 break
          except:
                 fail=1
                 break
    if not fail:
              s = s[0:-n]+ r[1]
    s = s + rest
print " ".join(s)
```

How it will be graded:
10 points – What does it print
15 points – Line-by-line description