The objective of this assignment is both to ensure that you have practiced some concepts of Chapters 7 and 8 and also to motivate you to learn some features of newer languages such as Python and Ruby. Although this assignment is easy, it is time-consuming because you will need to work with 7 different programming languages/compilers: Start Early.

For this assignment, you are required to provide answers to the following 7 exercises adopted from the Sebesta’s textbook (6th edition).

**Exercise A**
Run the code given in Problem 13 of Chapter 7 (in Page 316) in ALL of the following languages.

1) Fortran 95
2) C
3) Java
4) C#
5) Ada
6) Python
7) Ruby

a) Explain the results for each language.
b) Compare the results.

**Note:** Your answer is required to follow the following template:

<table>
<thead>
<tr>
<th>Your code in <strong>Fortran 95</strong> here:</th>
</tr>
</thead>
<tbody>
<tr>
<td>. . .</td>
</tr>
<tr>
<td>Explain the results of your <strong>Fortran 95</strong> code here:</td>
</tr>
<tr>
<td>. . .</td>
</tr>
<tr>
<td>Your code in <strong>C</strong> here:</td>
</tr>
<tr>
<td>. . .</td>
</tr>
<tr>
<td>Explain the results of your <strong>C</strong> code here:</td>
</tr>
<tr>
<td>. . .</td>
</tr>
<tr>
<td>Your code in <strong>Java</strong> here:</td>
</tr>
<tr>
<td>. . .</td>
</tr>
<tr>
<td>Explain the results of your <strong>Java</strong> code here:</td>
</tr>
<tr>
<td>. . .</td>
</tr>
</tbody>
</table>
Exercise B)

Rewrite the pseudo-code of the Programming Exercise 1 of Chapter 8 (in Page 350) in ALL of the following languages.

1) Fortran 95
2) C
3) Java
4) C#
5) Ada
6) Python
7) Ruby

Assume all variables are integer type. Discuss which language, for this code, has the best writability, the best readability, and the best combination of the two.

Note: Your answer is required to follow the following template:
Your code in **Ada** here:

. . .

Your code in **Python** here:

. . .

Your code in **Ruby** here:

. . .

Discuss which language, for this code, has the best writability, the best readability, and the best combination of the two, here:

. . .

**Exercise C)**

Redo the above exercise (exercise 2), except this time make all the variables and constants floating-point, and change the statement \( K \leftarrow K+1 \) to \( K \leftarrow K+1.2 \)

Your answer is required to follow the following template:

Your code in **Fortran 95** here:

. . .

Your code in **C** here:

. . .

Your code in **Java** here:

. . .

Your code in **C#** here:

. . .

Your code in **Ada** here:

. . .

Your code in **Python** here:

. . .

Your code in **Ruby** here:

. . .

Discuss which language, for this code, has the best writability, the best readability, and the best combination of the two:

. . .
**Exercise D)**
Do Programming Exercise 3 of Chapter 8 (specified in Page 350) in ALL of the following languages.

1) Fortran 95  
2) C  
3) Java  
4) C#  
5) Ada  
6) Python  
7) Ruby

Your answer is required to follow the following template:

<table>
<thead>
<tr>
<th>Your code in <strong>Fortran 95</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>Fortran 95</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your code in <strong>C</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>C</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your code in <strong>Java</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>Java</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your code in <strong>C#</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>C#</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your code in <strong>Ada</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>Ada</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your code in <strong>Python</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>Python</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your code in <strong>Ruby</strong> here:</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the relative merits of use of <strong>Ruby</strong> for this particular code here:</td>
<td>...</td>
</tr>
</tbody>
</table>
Exercise E)

Do Programming Exercise 4 of Chapter 8 (specified in Page 350) in language C.
Your answer is required to follow the following template:

Your code in C here:

Exercise F)

Do Programming Exercise 5 of Chapter 8 (in Page 350) in ALL of the following languages.

1) C#
2) Python
3) Ruby

Your answer is required to follow the following template:

Your code in C# here:

Your code in Python here:

Your code in Ruby here:

Exercise G)

Do Programming Exercise 6 of Chapter 8 (in Page 350) in your favorite language.
Your answer is required to follow the following template:

Your code in your favorite language here:

Important NOTES:

- **Note 1.** You may need to modify/develop some of above programs to declare the variables or to print the results.
- **Note 2.** Your submission must follow the above templates provided for each question(exercise).
- **Note 2.** It is extremely important that you develop YOUR OWN CODE and explain the results IN YOUR OWN WORDS. Answers that are very similar to those of other students or other resources are not accepted and can seriously and negatively impact your grade.
- **Note 3 (Marking scheme).** This assignment has 300 marks and for every question (exercise) that you do not provide the answer or the provided answer is incorrect you will lose 100 marks. This means—for instance—if you provide correct answers for 4 of the questions and leave the remaining 3 questions blank (or incorrect answers), you will get nothing (no bonus point)!
• **Note 4:** Make a copy of your answers for your own reference, as assignments will not be returned to you.

• **Note 5:** For this assignment, your submission must be typed (not handwritten).

This assignment has only 1 stage with the following deadline:

Hand in your answers in the beginning of class on Thursday, March 18.

IMPORTANT NOTE: ALL students have to hand in this assignment. This means even if you do not want to get any bonus point for this assignment, you STILL need to hand in to me a blank paper that you have your full name on it.

**Deadline: Thursday, March 18, in class (either at 12:30PM in S205 or at 5:00PM in S204).**

This is a VERY important assignment related to Partial Exam 3

**** Note the deadlines (dates and times) are firm. Please plan ahead. ****