CS 161A: Programming and Problem Solving I

# Final Exam Version A

| **Academic Integrity** **You may NOT, under any circumstances, begin a programming assignment by looking for completed code on StackOverflow or Chegg or any such website, which you can claim as your own. Please check out the** [**Student Code of Conduct at PCC.**](https://www.pcc.edu/student-conduct/conduct/quick-view-of-policy/)  The only way to learn to code is to do it yourself. The assignments will be built from examples during the lectures, so ask for clarification during class if something seems confusing. If you start with code from another source and just change the variable names or other content to make it look original, you will receive a zero on the assignment.  I may ask you to explain your assignment verbally. If you cannot satisfactorily explain what your code does, and answer questions about why you wrote it in a particular way, then you should also expect a zero. |
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Are you a runner, swimmer, or cyclist? Do you set goals and keep track of the number of miles each week? For your final exam, you will be writing a program to help a user set and keep track of their exercise goals!

## 

## Purpose

The purpose of this final exam is to test your knowledge of the concepts learned in this course so far:

* Variables and data types
* Expressions
* Input and output
* Conditionals (if/else, switch/case)
* Accumulators
* Loops

## Task

* Open the [Algorithmic Design Document](https://docs.google.com/document/d/1Y0kHPoUWHcbH-_0yma7sMCUR0EvLL7CKEvTGTetqEmU/edit?usp=sharing), make a copy, and follow the steps to create your algorithm.
* You must express your algorithm as **pseudocode** or a **flowchart.**
* Write a program to prompt a user for the number of miles they want to ride (walk, run, swim, whatever you want) this week.
* If the user enters 0 or less, print a message that no miles were tracked this week.
* If a valid number of miles is entered, you **must** use a for loop to prompt for the number of miles ridden each day for a week. Include the day of the week (Sunday, Monday, etc) in your prompt.
* If the user enters a number less than 0, print an error message and prompt for the same day again. (See sample run below).
* After all of the days have been entered, print a message with the total miles for the week and a message if they met their goal, were over their goal, or under their goal. Include the number of miles they were over or under in your message.
* Include a welcome and goodbye message. (See sample run below).
* Do not use arrays or any vectors for this program. Use only the concepts we have learned so far.

## Criteria for Success

* Test your program using the following sample runs, making sure you get the same output when using the given inputs (in **blue**):

| Welcome to my Miles Tracker program.  How many miles do you want to ride this week? **50**  How many miles did you ride on Sunday? **-9**  Miles must be 0 or greater!  How many miles did you ride on Sunday? **-3**  Miles must be 0 or greater!  How many miles did you ride on Sunday? **0**  How many miles did you ride on Monday? **10**  How many miles did you ride on Tuesday? **10**  How many miles did you ride on Wednesday? **10**  How many miles did you ride on Thursday? **10**  How many miles did you ride on Friday? **10**  How many miles did you ride on Saturday? **0**  You rode 50 miles this week.  Good job! You met your goal!  Keep riding! |
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| How many miles do you want to ride this week? **100**  How many miles did you ride on Sunday? **10**  How many miles did you ride on Monday? **10**  How many miles did you ride on Tuesday? **10**  How many miles did you ride on Wednesday? **10**  How many miles did you ride on Thursday? **10**  How many miles did you ride on Friday? **10**  How many miles did you ride on Saturday? **10**  You rode 70 miles this week.  Uh oh! You missed your goal by 30 miles!  Keep riding! |
| How many miles do you want to ride this week? **50**  How many miles did you ride on Sunday? **10**  How many miles did you ride on Monday? **10**  How many miles did you ride on Tuesday? **10**  How many miles did you ride on Wednesday? **10**  How many miles did you ride on Thursday? **10**  How many miles did you ride on Friday? **10**  How many miles did you ride on Saturday? **10**  You rode 70 miles this week.  Great job! You exceeded your goal by 20 miles!  Keep riding! |
| How many miles do you want to ride this week? **0**  No miles were tracked this week.  Keep riding! |
| How many miles do you want to ride this week? **-10**  No miles were tracked this week.  Keep riding! |

* Complete all sections of your Algorithmic Design Document.
* Include **pseudocode** or a **flowchart** in part d of the design document.
* Please open and compare your work with the [grading rubric](https://docs.google.com/document/d/1OgJpTGzDOtA6GMqi87ggiLgu79zw71-I80jPjC4eZMQ/edit?usp=sharing) before submitting.
* Remember to follow all [style guidelines](https://docs.google.com/document/d/1avQh7119eRLYZg2ctgeJ57eNRr-KgLr56h2eBxi9_dQ/edit?usp=sharing).
* Download your Algorithmic Design Document as a PDF (File -> Download -> PDF), rename it to fin.pdf.
* Name your C++ source file fin.cpp and upload with fin.pdf to the D2L assignment.
* Do your own work. Consult the syllabus for more information about academic integrity.