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Python – Project #1
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<u>Reflection</u>:

For this project, I completed a program that mimicks a workout app, except more tailored to my personal needs. In other words, the program is designed to offer the user several options determined by the user's available location and time, as well as workout type. Namely, it offers the choices of workouts outdoors (geared toward cardio exercises), the gym (for weight-lifting or cardio), or a quick, high-intensity training session indoors with minimal rest. For outdoor exercises, the user may select the standard endurance exercises of running and bicycling, which both ask the user to start a timer, enter the distance in miles following the route, and then calculates the user's average speed and estimates the number of calories burned based on both the distance and the intensity, as measured by that average speed. The user may also choose to do sprints over an entered distance, logging his split times for each; similarly, the program then calculates average speeds for each as well as estimated total calories burned. Lastly, the user may also choose pick-up basketball, using the same timer and calorie-burn estimator.

Alternatively, if the user has the means of using a gym (and bringing a laptop along for the ride), he may choose between three different weight-lifting routines as well as the lifting style (i.e. definition of sets, repetitions and weight progression). The program then walks him through each set, using an entered starting weight to determine the number of targeted repetitions as well as any ensuing changes in weights. The program logs all these entries and estimates the maximum amount of weight for which the user could lift exactly one repetition. Much like the outdoor cardio exercises, the gym option also offers various endurance machines such as eliptical and stair-stepper, as well as heavy bag striking, which use the speed and calorie-burn calculators from the parent workout class.

Third, the program also offers a self-designed or randomly-selected routine for the indoors. This lets the user choose from a list of which exercises to do, or randomly assigns based on an entered number of exercises; asks for the number of repetitions per exercise and the number of total rounds; and instructs the user through each exercise and round, ending with the amount of rest-time following a round of exercises. Based on these inputs, the program also estimates the number of calories burned by the workout.

Following any of these workouts, the program prints out a formatted summary of these results both to the command line as well as to an external text file, appending each new summary to the bottom of the file.

The biggest challenge to this process was fully taking advantage of the class and child-class structure, where certain calculations and attributes were common across all three workout types, while avoiding a never-ending path of nested if-statements when trying to arrive at the user's desired workout. Another shortcoming is having the output in only a semi-formatted text document, rather than something more consistent across workout types, like in the form of an Excel table. It looks as though the following units to this course will be helpful in that regard.

In terms of testing, the easiest way is to choose any number of workouts, see where their instructions take you, and what their methods estimate in terms of targets, calories, and speeds (better yet, test it with a home workout, depending on what kind of equipment or makeshift equipment you may have lying around). Generally, the instructions and options should be straight-forward with error-handling throughout for non-numerical values or invalid choices.