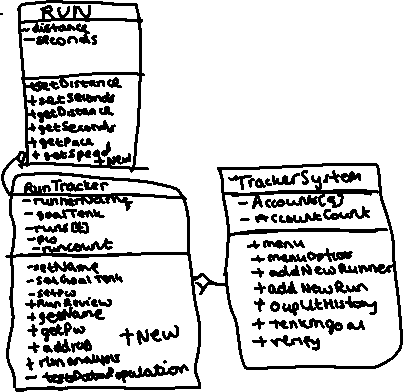
**Skeleton Program**

You will be receiving a skeleton program to research over the holidays. You should use the following pages to make notes on the program. Identify what it does, how it works, any errors and what improvements you would make.

**Explain the system, its purpose, what it does, data input, data returned**

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| The purpose of this system is to help Adidas sports system. It allows the user to input their name, add a run they did in metres and seconds, outputs its history and provides a 10km goal analysis. Data input: name, password, distance, speed. Data returned: 10km analysis, and returns the run history when asked, average speed, average pace. |

**Class Diagram**



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**Explain any inheritance**

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| There is no inheritance, just association aggregation and static. Association aggregation means that if RUN is deleted then RUN TRACKER and TRACKER SYSTEM are not deleted. Static method (Convert) can be run without being instantiated. |

**Class**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |
| --- | --- |
| Identifier | What it does (inheritance, aggregation etc) |
| Run | Properties/ Variables: distance, seconds  Methods: SetDistance(s), SetSeconds(s), GetDistance(f), GetSeconds(f), GetPace(f), GetSpeed(f), OutputRun(s)  OutputRun – [uses GetSpeed and GetPace] to output distance in km, time in minutes, average speed and average pace {sub}  ! ! Association Aggregation with Run Tracker ! ! |
|  |  |

**Properties**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Role | Validation | Scope (G/L) | What it does |
| Distance | this stores the distance they ran (entered in metres) | No Validation in this class but in Run Tracker class, we added a validation so that a suitable distance was entered | L | Private – integer |
| seconds | this stores the time it took for them to run it in (entered in seconds) | No Validation in this class but in Run Tracker class, we added a validation so that a suitable time was entered | L | Private – integer … crash if decimal? |
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**Methods**

List the subroutines involved in the program, parameters, return type, type, and what they do

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| --- | --- | --- | --- | --- |
| Identifier | Type  (F/P) | Parameters | Return | What it does |
| Constructor | P |  |  |  |
| GetDistance | F |  | The distance | literally gets the distance |
| SetDistance | P | newValue |  | Makes sure in a range? Make sure not negative? |
| GetSecond | F |  | The seconds | literally gets the timing |
| SetSecond | P | newValue |  |  |
| GetPace | P |  |  | -(seconds/60) means in minutes (distance/1000) means in kilometres  -Time / Distance |
| GetSpeed | P |  |  | -Distance Over Time  -Converts time from m/s to km /h with help of Static Convert |
|  |  |  |  |  |

**Class**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |
| --- | --- |
| Identifier | What it does (inheritance, aggregation etc) |
| TrackerSystem | Properties/ Variables: accounts(9), AccountCount  Methods: Constructor(s), Menu(f) ,Menu Options(s), AddNewRunner(s), AddNewRun(s), OutputHistory(s), TenKMGoal(s), Verify(f)  ! ! Association Aggregation with RunTracker ! ! |

**Properties**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Role | Validation | Scope (G/L) | What it does |
| Accounts() | This stores the pre-set data of Simon and Annie along with any other data when added |  |  |  |
| AccountCount | This counts the number of accounts there are – which is necessary for all the loops and stuff |  |  |  |
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**Methods**

List the subroutines involved in the program, parameters, return type, type, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Type  (F/P) | Parameters | Return | What it does |
| Constructor | P |  |  | stores the pre set data for Simon and Annie |
| Menu | F |  | Returns true or false after running all the tasks if applicable | Case 0 – false (and so ends the function there and so can exit)  Provides the options for user |
| Menu Options |  | P |  | Prints the options of what the user can do {sub} |
| AddNewRun | P | Run Tracker Class |  | Checks username and password are in the database (if not then there is an output message). Then it allows user to input run and stores the data in the array Accounts |
| Verify | F |  | Returns location of user in the array | If names match and password math then returns location in accounts array  Make sure username is unique |
| Add New Runner | P |  |  | Allows user to add a new runner. It allows input of name, 10km goal time, password |
| Output History | P | Run Tracker Class |  | Checks username and password are in the database (if not then there is an output message). Then it outputs all the data about runs previously for that particular runner (since prints according to array location) |
| Ten km goal | P | Run Tracker Class |  | Checks username and password are in the database (if not then there is an output message). Then it outputs whether or not the 10km goal has been met |
|  |  |  |  |  |

**Class**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |
| --- | --- |
| Identifier | What it does (inheritance, aggregation etc) |
| RunTracker | Properties/ Variables: runnerName, goalTenK, runs(4), pw, runCount  Methods: Constructor(s), SetName(f) ,SetGoalTenK(f), SetPw(f), RunReview(s), GetName(s), GetPw(f), AddRun(s), RunAnalysis(s), TestDataPopulation(s)  ! ! Association Aggregation with Run ! !  ! ! Uses static class Convert ! ! |

**Properties**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Role | Validation | Scope (G/L) | What it does |
| runnerName | for name |  |  |  |
| goalTenK | Store the 10km goal |  |  |  |
| Runs(4) |  |  |  |  |
| Pw | For password |  |  |  |
| runCount | Stores the number of runs per runner |  |  |  |

**Methods**

List the subroutines involved in the program, parameters, return type, type, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Type  (F/P) | Parameters | Return | What it does |
| AddRun | P | Run Class |  | !Try Catch – to ensure integer added!  Goes through adding a new run and storing it and then calculating pace and speed  Calculate pace and speed 🡪 useless?  Data Validation – data type to be added  Make sure not 0  Index out of bounds error by adding too many runs??!! |
| constructor | P | newName, newGoal, newPw, test |  |  |
| SetName | F | inputName | Returns a Boolean value | Ensure there is a name in. Returns true or false value. It is never called  Returns whether or not they input a name or nothing in the insert a name section |
| SetGoalTenk | F | inputGoal | Returns a Boolean value | Ability to reset goal  stores inputGoal as the goal |
| setPW | F | inputPw | Returns a Boolean value | !! Add validation  stores inputPw as the password |
| RunReview | P | Run Class |  | Outputs how much ran (km) and time (S), speed, pace |
| GetName | F |  | runnerName | returns name of person |
| GetPW | F |  | pW | returns password of person |
| RunAnalysis | P | Cpnvert Static Class |  | Returns analysis of the last run.  When we add a runner, have an empty data of run stuff, so run analysis will crash if ran before adding a new run.  Converts latest data into speed. Compares it with goal speed and then outputs a message on whether or not goal is met. |
| TestDataPopulation | P | Run Class |  | stores pre set data for Simon and Anne and one other person?!?! |

**Class**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |
| --- | --- |
| Identifier | What it does (inheritance, aggregation etc) |
| Converter | This converts the speed from meters per second to kilometres per hour  ! ! Static Function ! ! – used without creating an instance of the class |

**Properties**

List the variables involved in the program, their role, any validation performed or required, scope, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Role | Validation | Scope (G/L) | What it does |
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**Methods**

List the subroutines involved in the program, parameters, return type, type, and what they do

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Identifier | Type  (F/P) | Parameters | Return | What it does |
| Mps2kmph | SHARED FUNCTION | InputSpeed | The converted value | Converts speed into km/h {shared function} |
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**Errors**

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| **Where** | **Why** | **Solution** |
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**Improvements**

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| --- | --- | --- |
| **Where** | **Why** | **Solution** |
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