**Golf Application**

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The project will be developed using the java play framework and the use of an H2 database. It will have the following functionalities.

Track Handicap

* When a user is created, they will have the option of inputting a handicap that already has or to generate a new one. A user who chooses to generate a new handicap will have their initial handicap calculated from the first 3 rounds that they play.
* When a user plays “round”, their handicap is either deducted from or added to their gross score, depending on whether the handicap is “plus” or “minus” to give their net score (“plus” and “minus” handicaps will be explained later), which will used to alter their handicap as they play more rounds (e.g. If a user with a handicap of 16 plays a par 72 course and returns a gross score of 86, their net score will be 86 - 16 = 70. Since this is below the par of the course, their handicap will be lowered. If they returned a net score of above the par of the course, their handicap would be raised)
* A user’s handicap will be given to a single decimal point (e.g. 16.7), and rounded to the nearest number, which will be their playing handicap (e.g. A user with an exact handicap of 16.5 will have a playing handicap of 17, and a user with a handicap of 16.4 will have a playing handicap of 16)
* After the user, has played their first 3 rounds, their handicap will be calculated by subtracting the par of the course from their gross score for each round (keeping in mind that different courses can have different pars), and calculating the average of these 3 final scores (eg. if a user returns a gross score of 89 on a par 72, 88 on a par 72, and 90 on a par 71, the final scores would be 17, 16 and 19 respectively, the average of these scores giving the user an initial handicap of 17.3, which would be rounded down to give a playing handicap of 17)
* As the user plays more rounds, their net score will be compared with the par of the course to determine how their handicap should be adjusted. A net score that is equal to, or up to 2 shots worse than the par of the course will not increase or decrease the user’s handicap. A net score that is at least 3 shots worse than the par of the course will add 0.1 to their handicap (this is to take into consideration that it is very difficult for a user to consistently return scores that are as good as or better than their handicap. By only increasing their handicap when they play a bad round, this will avoid the handicap from fluctuating wildly). If a user returns a net score that is below par, their handicap will be reduced according to what category their handicap falls into (this is explained below)
* There will be 3 categories a user’s handicap can fall into.

1. Category 1: any playing handicap better than 9 inclusive (including “plus” handicaps). A user’s handicap that falls into this category will have their handicap reduced by 0.1 for each shot better than par on any round that they play.
2. Category 2: any playing handicap between 10 - 19 inclusive. A user’s handicap that falls into this category will have their handicap reduced by 0.2 for each shot better than par on any round that they play.
3. Category 3: any playing handicap between 20 - 28 inclusive. A user’s handicap that falls into this category will have their handicap reduced by 0.3 for each shot better than par on any round that they play.

* The maximum handicap a user may have is 28.0, and there is no minimum handicap (this is because it is physically impossible for a user to have a gross score better than 18 on an 18-hole course)
* For calculating how a player’s handicap affects the gross score of a round to give the net score, there will be 2 categories that handicaps fall into.
  1. “plus”: a plus handicap is any playing handicap below 0. A plus handicap will be added to the gross score of a round to give the net score. A plus handicap will be indicated using the “+” symbol just before the handicap (e.g. +2, or +1.6).
  2. “minus”: a minus handicap is any playing handicap equal to or above 0. A minus handicap will be deducted from the gross score of a round to give the net score. A minus handicap will not be indicated using any explicit symbol, all handicaps without a “+” symbol are implicitly minus handicaps.

Track statistics

* When inputting a round, the user will be given the option to either record the gross score from a round, or to input the statistics for the round (which will include recording the gross score of the round)
* When recording the statistics for a round, the user will be asked to input the statistics for each hole. These statistics will proceed as follows
  1. Did the user hit the fairway? (yes/no answer, any par 3 will not have this question as there is no fairway on a par 3)
  2. If the user missed the fairway, did the user miss the fairway left/right?
  3. Did the user hit the green in regulation? (yes/no answer, hitting a green in regulation is defined as the ball staying on the green after a number of shots such that the user has a putt for a birdie or better, a birdie is defined as a score that is 1 shot better than the par of the hole)
  4. If the user did not hit the green in regulation, did the user miss the green left/right/long/short?
  5. If the user did not hit the green in regulation, how many shots did the user take before the ball stayed on the green?
  6. After hitting the green, how many putts did the user take before finishing the hole?
  7. Did the user miss any putts shorter than 2 feet? (yes/no answer)
  8. Did the user take any penalty strokes on the hole? (yes/no answer)
  9. If the user took any penalty strokes on the hole, how many did they take?
* While recording the statistics for a round, the user will have the option of returning to previous holes or proceeding to the next hole if the current hole’s statistics have been completed.
* After recording the statistics for a hole, the score on that hole will be calculated.
* After recording the statistics for each hole, the gross score for the round will be calculated by adding up the scores for each hole. The user will be presented with an on-screen scorecard, which will display the scores for each hole, the par on each hole, and the final score gross, and net scores for the round. The user will be asked to confirm that these scores are correct.
* If the scores are not correct, the user will be able to go back through each hole to adjust their score.
* If the user confirms that the scores are correct, they will be presented with several graphs that show some of their statistics in a visual format. These will be as follows:
  1. Driving accuracy, a half pie chart that will show the percentage of fairways that they hit, missed left, and missed right
  2. Greens in regulation, a pie chart that will show the percentage of greens in regulation that they hit, missed left, missed right, missed short, or missed long.
  3. Putting, a bar graph that will display the number of 0-putts, 1-putts, 2-putts, and 3+ putts in the round (a 0-putt means that the user managed to get the ball in the hole without needing to putt)
  4. Scoring, a bar graph displaying a number of eagles (2 shots better than par), birdies (1 shot better than par), pars, bogeys (1 shot worse than par), double-bogeys (2 shots worse than par, etc.), triple-bogeys (or worse) during the round
* after recording statistics for a round, the data will be saved in a database, and the user will be able to view their average statistics for their last 5 rounds, last 10 rounds, and their all-time average statistics (i.e. The average statistics for all of the rounds that they have recorded)

Timetable

* the user will be able to record their planned rounds of golf. They will be asked to input several details for the round, which will be as follows:
  1. date
  2. tee time
  3. golf course
  4. playing partners (these can be other users, people who do not use the application, or unknown)
* the user may record that they do not have any playing partners. If they do so, they can be suggested other users within their skill range (their skill range being ±4 shots on their handicap), if the user wishes, they can be given the contact details of any of these suggestions.