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1  #include <cs50.h>
2  #include <stdio.h>
3
4  typedef struct
5  {
6      int hole_number;
7      int handicap;
8      int par;
9      int score;
10 }
11 hole;
12
13 // Function prototypes
14 void print_par(hole course[], int length);
15 void print_difficulty(hole course[], int length);
16 void print_averages(hole course[], int length);
17 void print_percentages(hole course[], int length);
18
19 int main(void)
20 {
21     // Prompt user for number of holes
22     int n = get_int("How many golf holes did you play today? ");
23     printf("\n");
24     hole course[n];
25
26     // Prompt user for info about those holes
27     for (int i = 0; i < n; i++)
28     {
29         course[i].hole_number = get_int("Golf course hole number: ");
30         course[i].handicap = get_int("Hole handicap rating: ");
31         do {
32             course[i].par = get_int("Hole par: ");
33         }
34         while (course[i].par < 3 || course[i].par > 5);
35         course[i].score = get_int("Your score: ");
36         printf("\n");
37     }
38
39     // Compared to par
40     print_par(course, n);
41
42     // Easiest and hardest holes of the day
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```
43     print_difficulty(course, n);
44
45     // Average score on par 3's par 4s, and par 5's
46     print_averages(course, n);
47
48     // Percentages
49     print_percentages(course, n);
50
51 }
52
53 // Function that prints your score compared to par
54 void print_par(hole course[], int length)
55 {
56     int total_par = 0;
57     int total_score = 0;
58     for (int i = 0; i < length; i++)
59     {
60         total_par += course[i].par;
61         total_score += course[i].score;
62     }
63     if (total_score < total_par) {
64         printf("You were %i under par though %d holes.\n", total_par - total_score, length);
65     }
66     else
67     {
68         printf("You were %i over par though %d holes.\n", total_score - total_par, length);
69     }
70 }
71
72
73 // Function that prints the easiest and hardest hole
74 void print_difficulty(hole course[], int length)
75 {
76     int easiest_handicap = 0;
77     int easiest_hole;
78     int hardest_handicap = 19;
79     int hardest_hole;
80     for (int i = 0; i < length; i++)
81     {
82         if (course[i].handicap > easiest_handicap)
83         {
84             easiest_handicap = course[i].handicap;
```

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85         easiest_hole = course[i].hole_number;
86     }
87
88     if (course[i].handicap < hardest_handicap)
89     {
90         hardest_handicap = course[i].handicap;
91         hardest_hole = course[i].hole_number;
92     }
93 }
94
95 printf("Hole %d was the easiest hole you played and hole %d was the hardest hole you played.\n",
easiest_hole, hardest_hole);
96 }
97
98 // Function that prints the average scores for par 3, 4, and 5s
99 void print_averages(hole course[], int length)
100 {
101     int par3_count = 0;
102     float total_par3_score = 0;
103     int par4_count = 0;
104     float total_par4_score = 0;
105     int par5_count = 0;
106     float total_par5_score = 0;
107
108     for (int i = 0; i < length; i++ )
109     {
110         if (course[i].par == 3)
111         {
112             par3_count++;
113             total_par3_score += course[i].score;
114         }
115         else if (course[i].par == 4)
116         {
117             par4_count++;
118             total_par4_score += course[i].score;
119         }
120         else
121         {
122             par5_count++;
123             total_par5_score += course[i].score;
124         }
125     }
```

```
126
127     if (par3_count <= 0)
128     {
129         printf("You didn't play any par 3s.\n");
130     }
131     else
132     {
133         printf("Your average score on a par 3 was %.2f.\n", total_par3_score / par3_count);
134     }
135
136     if (par4_count <= 0)
137     {
138         printf("You didn't play any par 4s.\n");
139     }
140     else
141     {
142         printf("Your average score on a par 4 was %.2f.\n", total_par4_score / par4_count);
143     }
144
145     if (par5_count <= 0)
146     {
147         printf("You didn't play any par 5s.\n");
148     }
149     else
150     {
151         printf("Your average score on a par 5 was %.2f.\n", total_par5_score / par5_count);
152     }
153 }
154
155 // Function that prints the percentage of birdies or better,
156 // pars, bogies, double bogies, and triple bogies or worse.
157 void print_percentages(hole course[], int length)
158 {
159     float birdies = 0;
160     float pars = 0;
161     float bogies = 0;
162     float double_bogies = 0;
163     float triple_bogies = 0;
164
165     for (int i = 0; i < length; i++)
166     {
167         int offset = course[i].par - course[i].score;
```

```
168
169     if (offset >= 1)
170     {
171         birdies++;
172     }
173     else if (offset == 0)
174     {
175         pars++;
176     }
177     else if (offset == -1)
178     {
179         bogies++;
180     }
181     else if (offset == -2)
182     {
183         double_bogies++;
184     }
185     else
186     {
187         triple_bogies++;
188     }
189
190 }
191
192 printf("Percentages:\n");
193 printf("\tBirdy or better: %d%%\n", (int) ((birdies / length) * 100));
194 printf("\tPar: %d%%\n", (int) ((pars / length) * 100));
195 printf("\tBogey: %d%%\n", (int) ((bogies / length) * 100));
196 printf("\tDouble Bogey: %d%%\n", (int) ((double_bogies / length) * 100));
197 printf("\tTriple Bogey or Higher: %d%%\n", (int) ((triple_bogies / length) * 100));
198 }
```