```
#include <iostream>
 1
 2
      #include <string.h>
 3
      #include <iomanip>
                             // To use setprecision() and setw()
 4
 5
     using namespace std;
 6
          float sales[8][6] {0}; // 2D array of sales with sales person as a column and product
 8
         string salespersons[6] = {"Products", "SalesPerson 1", "SalesPerson 2", "SalesPerson
      3", "SalesPerson 4", "Product Total"};
      string products[8] =
{"Product0", "Product1", "Product2", "Product3", "Product4", "Product5", "Total Sale", "Bonus
 9
10
11
      // Prototypes / Function declaration
12
     void menu();
13
     void slip();
14
     bool again();
15
     void display();
16
     void total():
17
     void bonus();
18
     void findSP();
19
     void findP();
20
     void SpRank();
21
     void changeN();
22
     void changeSPN();
23
     void changePN();
24
     void devs();
25
     inline void cont();
26
     inline void clear();
27
28
      // Main
29
     int main(){
30
      // credit@ ASCII ART
     cout <<" =====
31
                                                                                         << endl;
     cout <<"
32
                                                                                          " << endl;
     cout <<"
33
     cout <<"
                                                                                         " << endl;
                                                                                              | " << endl;
     cout <<"
35
     cout <<"
                                                                                                 << endl;
36
     cout <<"
37
     cout <<"
38
39
40
         menu();
          return 0;
41
42
43
      // Menu
44
     void menu(){
45
46
          char choice;
47
          cout << end1 <<"\t\tMAIN MENU" << end1<< end1;</pre>
48
          cout <<"\there are the Options:\n" << endl;</pre>
          cout <<"\tEnter 1 - Add slip" << endl;</pre>
49
          cout <<"\tEnter 2 - View Summary Table" << endl;</pre>
50
          cout <<"\tenter 3 - Find specific SalesPerson info" << endl;</pre>
51
          cout <<"\tEnter 4 - Find specific Product info" << endl;</pre>
52
53
          cout <<"\tEnter 5 - Salespersons LeaderBoard" << endl;</pre>
          cout <<"\tEnter 6 - Change Name" << endl;</pre>
54
          cout <<"\tenter 7 - Developers" << endl;
cout <<"\tenter 0 - Exit" << endl;</pre>
55
56
          cout <<"\nChoose Options: ";</pre>
57
58
          cin >> choice;
59
          switch (choice) {
60
              case '1':
61
                   do{slip();}while(again());
62
                   break;
63
              case '2':
64
                  display();
65
                   break;
66
67
                   findSP();
68
                   break;
69
              case '4':
                   findP();
70
71
                   break;
              case '5':
72
73
                   SpRank();
74
                   break;
75
              case '6':
76
                   changeN();
77
                   break;
78
              case '7':
79
                  devs();
80
                   break;
```

```
case '0':
81
82
                  cout <<endl << "\tGood Bye. See you :) " << endl;</pre>
83
                   exit(0);
 84
                   break;
85
               default:
86
                   cout << "Invalid Choice" << endl << endl;</pre>
87
                   break;
88
          if(choice !='1' && choice != '6')
89
90
              cont();
          clear();
91
92
          menu();
93
 94
      // Add daily salesperson slip
95
    void slip() {
96
97
       clear();
98
          int snum, pnum;
99
          float pvalue;
100
          cout << endl << "\t\t ADD SLIP DATA\n" << endl;</pre>
         cout << "\tEnter salesperson number [1-4] : " ;</pre>
101
102
          cin >> snum;
103
          cout << "\tEnter sold product number [1-5]: ";</pre>
          cin >> pnum;
104
          cout << "\tHow much money sold (in birr) : ";</pre>
105
          cin >> pvalue;
106
107
          sales[pnum][snum] += pvalue;
108
109
         if (snum < 5 && pnum < 6 && snum > 0 && pnum > 0 )
              cout << endl <<"\tSlip data added Successfully!" << endl;</pre>
110
111
              cout << endl <<"\tInvalid input. Slip Adding failed..." << endl;</pre>
112
113
114
      \ensuremath{//} Ask if user wants to add another slip Again
115
116 bool again(){
      bool again = false;
117
118
          char x;
119
         cout << endl << "\tWanna add again? Y/N : ";</pre>
120
          cin >> x;
          switch(x) {
121
122
            case 'Y':
              case 'y':
123
               again = true;
break;
124
125
             case 'N':
case 'n':
126
127
128
              default:
129
                  again = false;
130
131
          clear();
132
          return again;
133
134
      // calculate Total sales values
135
136 void total(){
137
          // row total
          for (int i=1; i<6; i++) {</pre>
138
               sales[i][5] = 0;

for ( int j =1; j<5; j++){

    sales[i][5] += sales[i][j];
139
140
141
142
143
          // column total
144
          for (int i=1; i<6; i++) {</pre>
145
146
               sales[6][i] = 0;
              for ( int j =1; j < 6; j++) {
    sales[6][i] += sales[j][i];</pre>
147
148
149
150
151
      // Calculate 5% Bonus of each salesperson
152
153
      void bonus(){
         for (int i=1;i<6;i++) {</pre>
154
               sales[7][i] = (0.05) * sales[6][i]; // Bonus = 5% of Total sale
155
156
157
      }
158
      // Display Table
159
160
      void display() {
161
       clear();
162
          total();
163
         bonus();
164
```

```
165
          cout << endl << endl << endl << "\t";</pre>
166
          cout << "\t\t\t SUMMARY OF TOTAL SALE\n\t";</pre>
167
      ----" << endl<< "\t";
        for (int i=0; i<6; i++)</pre>
168
169
            cout << left << setw(15) << salespersons[i] << "| ";</pre>
170
          cout << endl<< "\t";</pre>
171
         cout <<
      "-----
      ----" << endl << "\t";
172
173
          for (int i=1; i<8; i++) {</pre>
               cout << fixed << setprecision(2) << left << setw(15) << products[i] << "| ";</pre>
174
               for (int j=1; j<6; j++) {
175
                   cout << setw(15) << sales[i][j] << "| ";</pre>
176
177
178
              cout << endl << "\t";</pre>
179
              if(i==5)
180
                   cout <<
      ----" << endl<< "\t";
181
         }
182
         cout <<
      "-----
      ----" << endl<< "\t";
183
         cout << endl<< "\t";</pre>
184
185
      // clear screen for a better view
186
187
      inline void clear(){
188
       system("CLS");
189
190
      // Go to menu
191
192
      inline void cont(){
193
          string n;
194
          cout << endl << "Press Enter to continue: ";</pre>
195
          cin.ignore();
          getchar();
196
197
198
      // Search for specific salesperson information
199
200
      void findSP(){
          int spnum, total=0;
201
202
          cout << endl << endl;</pre>
203
          cout << "\tEnter Sales person number: ";</pre>
          cin >> spnum;
204
205
206
          if (spnum >0 && spnum < 5){</pre>
207
               clear();
208
               cout << endl << endl;</pre>
               cout << "\n\tSalesperson " << spnum << " sale information: "<< endl;</pre>
209
              for (int i=1;i<6;i++) {
    cout << "\tProduct "<< i <<" sale:\t"<< sales[i][spnum] << " birr"<< endl;</pre>
210
211
212
                   total += sales[i][spnum];
213
                                                      -----" << endl;
214
               cout << "\t-----
               cout << "\tTotal sale: \t" << sales[6][spnum] << " birr" << endl << endl;
cout << "\tBonus (5%): \t" << sales[7][spnum] << " birr" << endl << endl;</pre>
215
216
217
218
          else
219
              cout << "\tInvalid Input." << endl;</pre>
220
      // Search for specific product information
221
      void findP(){
222
223
          int pnum , total=0;
          cout << endl << endl;
cout << "\tEnter Product number: ";</pre>
224
225
          cin >> pnum ;
226
227
          if (pnum >0 && pnum < 6) {
228
              clear();
229
               cout << endl << endl;
cout << "\n\tProduct " << pnum <<" sales information:" << endl << endl;</pre>
230
231
               for (int i=1;i<5;i++) {</pre>
232
                   cout << "\tSale by Salesperson "<< i <<":\t"<< sales[pnum ][i] << " birr"<</pre>
      endl;
233
                   total += sales[pnum ][i];
234
               cout << "\t-----" << end1;
235
               cout << "\tTotal sale of the Product: " << sales[pnum ][5] << " birr" << endl <</pre>
236
      endl;
237
238
          else
```

```
240
       // Rank of salespersons / leader board
241
242
       void SpRank() {
243
           total();
244
           clear();
           float Top[5];
245
246
            string Rank[5];
247
248
            for (int i=1;i<5;i++) { // copy</pre>
249
                 Top[i] = sales[6][i];
                Rank[i] = salespersons[i];
250
251
252
            for (int i=1;i<5;i++) {    //sort</pre>
                for (int j=1;j<5;j++) {
    if (Top[i]> Top[j]) {
253
254
255
                          swap(Top[i], Top[j]);
256
                           swap(Rank[i], Rank[j]);
257
258
            cout << endl << endl;</pre>
            cout << "\t\tLEADERBOARD\n"<< endl;</pre>
259
            cout << "\tRank" << "\t" << "\t\tTotal Sale" << endl;</pre>
260
            cout << "\t----\n";
261
262
            for (int i=1; i<5; i++) {</pre>
                cout << "\t" << left << setw(15) << Rank[i] << "\t";
cout << fixed << setprecision(2) << Top[i] << " birr" << endl;</pre>
263
264
265
266
       // Group Members ( Developers) Name and ID No.
267
268
      void devs() {
269
            clear();
       string memebers[][2] = {{"Birhanu Worku", "ETS 0279/13"},{"Biruk Mesfin","ETS
0290/13"},{"Bisrat Kebere","ETS 0306/13"},{"Biyaol Mesay","ETS 0309/13"},{"Dagim
270
       Tezerawork", "ETS 0333/13"}};
            cout << endl << endl;
cout << "\t ADDIS ABABA SCIENCE AND TECHNOLOGY UNIVERSITY\n";</pre>
271
272
            cout << "\t COLLEGE OF ELECTRICAL AND MECHANICAL ENGINEERING\n";</pre>
273
274
            cout << "\t\tDEPARTMENT OF SOFTWARE ENGINEERTING\n";</pre>
275
            cout << "\t\t\t\tSECTION A\n" << endl << endl;</pre>
276
           cout << "\t\t" << left << setw(3) << "No" << setw(20) << "Name" << setw(25) << "ID"</pre>
277
       cout << "\t\t" << setw(3) << "--" << setw(20) << "-----" << setw(25) <<
"-----" << end1:</pre>
278
                 ----" << endl;
279
280
           for (int i = 0; i < 5; i++) {
                cout << "\t\t" << setw(3) << i + 1 << setw(20) << members[i][0] << setw(25) <<</pre>
281
       memebers[i][1] << endl;</pre>
282
           }
            cout << endl << "\tInstructor: Eleni T." << endl << "\tSubmitted on: 25th April,</pre>
283
       2022"<< endl;
284
285
       // Menu to change Change Product and Salesperson Names
       void changeN(){
286
287
           clear();
288
       fail:
289
            char type;
            cout << endl << "\t\tCHANGE NAME" << endl << endl;
cout << "\tHere are the Options\n" << endl;</pre>
290
291
           cout << "\tEnter 1 - Set / Change SalesPerson name"<< endl;
cout << "\tEnter 2 - Set / Change Product name"<< endl;
cout << "\tEnter 3 - Back to Menu" << endl;</pre>
292
293
294
295
            cout << "\nChoose Options: ";</pre>
296
            cin >> type;
297
298
            switch(type) {
299
                case '1':
300
                     changeSPN();
301
                     break;
302
                 case '2':
303
                     changePN();
304
                     break;
305
                case '3'
306
                     break;
307
                 default:
                      clear();
cout << "\n\nInvalid input. Try Again." << endl;</pre>
308
309
310
                      goto fail;
311
                     break;
312
313
            if(type!='3')
314
                cont();
315
       // Change Sales person name
316
317
       void changeSPN() {
```

```
318
           int spnum;
319
           cout << "Enter sales person number[1-4]: ";</pre>
320
           cin >> spnum;
321
          if(spnum > 0 && spnum < 5) {
   cout << endl << endl<<"Current name: " << salespersons[spnum] << endl;
   cout << "Enter new name: ";</pre>
322
323
324
325
                cin >> salespersons[spnum];
326
               cout << "Name Successfully changed!" << endl;</pre>
327
328
           else
329
                cout << "Invalid salesperson number. You should enter [1-4]."<< endl;</pre>
330
331
       // Change Product name
332
      void changePN(){
333
           int pnum;
           cout << "Enter product number[1-5]: ";</pre>
334
335
           cin >> pnum;
336
337
           if(pnum > 0 && pnum < 6){
               cout << endl << endl<<"Current name: " << products[pnum] << endl;</pre>
338
                cout << "Enter new name: ";</pre>
339
340
               cin >> products[pnum];
               cout << "Name Successfully changed!" << endl;</pre>
341
342
343
           else
               cout << "Invalid product number. You should enter [1-5]."<< endl;</pre>
344
345
346
      // Instructor: Eleni T.
347
      // Submission date: April 25, 2022.
// 2022 @ AASTU. Department of Software Engineering. Section A.
348
349
350
```