```cpp
/*****************************************************************************
 * PROGRAMMER : Ali Eshghi & Amirarsalan Valipour
 * STUDENT ID : 1112261 & 1103126
 * CLASS      : CS1B
 * SECTION    : MW 7:30pm
 * Assign #2  : tic-tac-toe game (multi-dimensional arrays)
 * DUE DATE   : 19 September 2019
 *****************************************************************************/

#include "MyHeader.h"
#include "ClassHeader.h"

/*****************************************************************************
* Lab 12
* ---------------------------------------------------------------------------
* This program uses the class and initializes the objects of the class using
* methods. then based on the user's choice the objects' values can be changed
* or get reinitialized to the first values.
* ---------------------------------------------------------------------------
* INPUT  : firstMenuOption -> The first choice that initializes the objects
*                             or exits the program
*          menuChoice      -> choice of the user to change the age or value,
*                             reinitialize, or display the data
*          newAge          -> change the value of the object age of the class
*          newValue        -> change the value of the object value of the class
* ---------------------------------------------------------------------------
* PROCESS: Initializing objects
*          Getting the first choice for the first menu
*          Getting the choice for the main menu
*          changing the age
*          changing the value
* ---------------------------------------------------------------------------
* OUTPUT : the values of the object variables of the class
*****************************************************************************/
int main()
{
    /*************************************************************************
    * CONSTANTS
    * ---------------------------------------------------------------------
    * OUTPUT - USED FOR CLASS HEADING
    * ---------------------------------------------------------------------
    * PROGRAMMER  : Programmer's Name
    * CLASS       : Student's Course
    * SECTION     : Class Days and Time
    * LAB_NUM     : Lab Number (specific to this lab)
    * LAB_NAME    : Title of the Assignment
    *************************************************************************/
    const string PROGRAMMER = "Ali Eshghi and Amirarsalan Valipour";
    const string CLASS      = "CS1B";
    const string SECTION= "MW: 7:30p - 9:50p";
    const int    LAB_NUM= 12;
    const string LAB_NAME   = "Intro to OOP";

    /*************
     * VARIABLES *
```

```
 56      *************/
 57
 58     int startOption;  //IN - choice of the first menu
 59     int     menuOption;   //IN - choice of the main menu
 60     int     animalOption; //IN - choice of which animal
 61
 62     boolcheckInp;     //PROCESS - input checking
 63
 64     charinitialSure;  //IN - choice of reinitializing
 65
 66     int age1;             //PROCESS & OUT - age for Fluffy
 67     int age2;             //PROCESS & OUT - age for Maa
 68     int ageP;             //PROCESS & OUT - age for Babe
 69
 70     float value1;         //PROCESS & OUT - value for Fluffy
 71     float value2;         //PROCESS & OUT - value for Maa
 72     float valueP;         //PROCESS & OUT - value for Babe
 73
 74     string name1;         //OUT - name for Fluffy
 75     string name2;         //OUT - name for Maa
 76     string nameP;         //OUT - name for Babe
 77
 78     string type1;         //OUT - animal type for Fluffy
 79     string type2;         //OUT - animal type for Maa
 80     string typeP;         //OUT - animal type for Babe
 81
 82
 83     Sheep1 fluffy;        //PROCESS - variable for class Sheep1
 84     Sheep2 maa;           //PROCESS - variable for class Sheep2
 85     Pig    babe;      //PROCESS - variable for class Pig
 86
 87
 88     /*************
 89      *  PROCESS  *
 90      *************/
 91     //this function will print header to the screen
 92     PrintHeader(PROGRAMMER, CLASS, SECTION, LAB_NUM, LAB_NAME);
 93
 94     //This function gets the user choice for the first menu to initialize or
 95     //exit the program
 96     startOption = FirstMenu();
 97
 98     //if for the first choice that initializes the objects
 99     if(startOption == 1)
100     {
101         cout << "\nInitializing Fluffy, Maa, and Babe..." << endl << endl;
102
103         /**************
104          * INITIALIZE *
105          **************/
106
107         age1 = 1;
108         age2 = 3;
109         ageP = 2;
110
```

```
111         value1 = 15000.00;
112         value2 = 16520.35;
113         valueP = 10240.67;
114 
115         name1  = "Fluffy";
116         name2  = "Maa";
117         nameP  = "Babe";
118 
119         type1  = "Sheep";
120         type2  = "Sheep";
121         typeP  = "Pig";
122 
123 
124         //methods for the three class that initializes the objects of the class
125 
126         fluffy.SetTypeSheep1(type1);
127         fluffy.SetNameSheep1(name1);
128         fluffy.SetAgeSheep1(age1);
129         fluffy.SetValueSheep1(value1);
130 
131         maa.SetTypeSheep2(type2);
132         maa.SetNameSheep2(name2);
133         maa.SetAgeSheep2(age2);
134         maa.SetValueSheep2(value2);
135 
136         babe.SetTypePig(typeP);
137         babe.SetNamePig(nameP);
138         babe.SetAgePig(ageP);
139         babe.SetValuePig(valueP);
140 
141     }
142 
143 
144 
145     //while loop for the main menu untill the choice 0 is entered
146     while(startOption != 0 || menuOption != 0)
147     {
148         //this function will get the user's choice for the main menu
149         menuOption = Menu();
150 
151         //if statement for the first option
152         if(menuOption == 1)
153         {
154             checkInp = false;
155 
156             do
157             {
158                 //INPUT - asks user if they are sure for reinitialization
159 
160 
161                 cout << "Are you sure you want to reinitialize (Y/N)?";
162                 cin.get(initialSure);
163 
164 
165                 //CHECKS FOR THE CHAR INPUT
```

```
166
167                 if (toupper(initialSure) != 'Y' && toupper(initialSure) != 'N')
168                 {
169                     cin.clear();
170                     cin.ignore(numeric_limits<streamsize>::max(), '\n');
171
172                     cout << endl;
173                     cout << "**** "<< initialSure
174                          << " is an invalid entry     ****" << endl;
175                     cout << "**** Please input Y or N ****";
176                     cout << endl << endl;
177
178                     checkInp = false;
179
180
181                 }
182
183                 else
184                 {
185
186                     cin.ignore(numeric_limits<streamsize>::max(), '\n');
187                     checkInp = true;
188
189                 }
190
191             }while(!checkInp);
192
193             //if statement for reinitializing the classes to the first values
194             if(toupper(initialSure) == 'Y')
195             {
196                 cout << "\nInitializing Fluffy, Maa, and Babe..." << endl
197                      << endl;
198
199                 age1 = 1;
200                 age2 = 3;
201                 ageP = 2;
202
203                 value1 = 15000.00;
204                 value2 = 16520.35;
205                 valueP = 10240.67;
206
207                 name1 = "Fluffy";
208                 name2 = "Maa";
209                 nameP = "Babe";
210
211                 type1 = "Sheep";
212                 type2 = "Sheep";
213                 typeP = "Pig";
214
215                 fluffy.SetTypeSheep1(type1);
216                 fluffy.SetNameSheep1(name1);
217                 fluffy.SetAgeSheep1(age1);
218                 fluffy.SetValueSheep1(value1);
219
220                 maa.SetTypeSheep2(type2);
```

```
221                 maa.SetNameSheep2(name2);
222                 maa.SetAgeSheep2(age2);
223                 maa.SetValueSheep2(value2);
224 
225                 babe.SetTypePig(typeP);
226                 babe.SetNamePig(nameP);
227                 babe.SetAgePig(ageP);
228                 babe.SetValuePig(valueP);
229 
230 
231             }
232 
233             else if(toupper(initialSure) == 'N')
234             {
235                 cout << "Animals have not beenre-initialized!" << endl <<endl;
236             }
237 
238 
239 
240         }
241 
242         //if statement for the second option of the menu
243         else if(menuOption == 2)
244         {
245             checkInp = false;
246 
247 
248             //do while loop for user input for which animal they want to change
249             do
250             {
251                 //INPUT
252                 cout << "\nCHANGE AGE:" << endl;
253                 cout << "1 - Fluffy"    << endl;
254                 cout << "2 - Maa"       << endl;
255                 cout << "3 - Babe"      << endl;
256 
257                 cout << "Select the animal you'd like to change: ";
258 
259 
260                 //CHECKS FOR THE CHAR INPUT
261 
262                 if (!(cin >> animalOption))
263                 {
264                     cin.clear();
265                     cin.ignore(numeric_limits<streamsize>::max(), '\n');
266 
267                     cout << endl;
268                     cout << "**** Please input a NUMBER between 1 and 3 ****";
269                     cout << endl << endl;
270 
271                     checkInp = false;
272 
273                 }
274 
275                 //CHECKS FOR THE RANGE ERROR
```

```
276
277                 else if (animalOption >= 4 || animalOption <= 0 )
278                 {
279
280                     cout << endl;
281                     cout << "**** The number "              << animalOption
282                     << " is an invalid entry     ****" << endl;
283                     cout << "**** Please input a number between 1 and 3 ****";
284                     cout << endl << endl;
285
286                     checkInp = false;
287
288                 }
289
290                 //PASS
291
292                 else
293                 {
294
295                     cin.ignore(numeric_limits<streamsize>::max(), '\n');
296                     checkInp = true;
297
298                 }
299
300             }while(!checkInp);
301
302
303             //if statement if the user wants to change the age for Fluffy
304             if(animalOption == 1)
305             {
306
307                 age1 = ChangeAge();
308
309                 cout << "\nChanging Fluffy's age to " << age1 << "..." << endl
310                      << endl;
311
312                 fluffy.SetAgeSheep1(age1);
313             }
314
315             //if statement if the user wants to change the age for Maa
316             else if(animalOption == 2)
317             {
318                 age2 = ChangeAge();
319
320                 cout << "\nChanging Maa's age to " << age2 << "..." << endl
321                      << endl;
322
323                 maa.SetAgeSheep2(age2);
324             }
325
326             //if statement if the user wants to change the age for Babe
327             else if(animalOption == 3)
328             {
329                 ageP = ChangeAge();
330
```

```
331                 cout << "\nChanging Babe's age to " << ageP << "..." << endl
332                      << endl;
333 
334                 babe.SetAgePig(ageP);
335             }
336         }
337 
338         //if statement for the third option of the main menu
339         else if(menuOption == 3)
340         {
341             checkInp = false;
342 
343             cout << "\nCHANGE Value:" << endl;
344 
345             //do while loop for user input for which animal the user wants to
346             //change
347             do
348             {
349                 //INPUT
350 
351                 cout << "1 - Fluffy" << endl;
352                 cout << "2 - Maa"    << endl;
353                 cout << "3 - Babe"   << endl;
354 
355                 cout << "Select the animal you'd like to change: ";
356 
357 
358                 //CHECKS FOR THE CHAR INPUT
359 
360                 if (!(cin >> animalOption))
361                 {
362                     cin.clear();
363                     cin.ignore(numeric_limits<streamsize>::max(), '\n');
364 
365                     cout << endl;
366                     cout << "**** Please input a NUMBER between 1 and 3 ****";
367                     cout << endl << endl;
368 
369                     checkInp = false;
370 
371                 }
372 
373                 //CHECKS FOR THE RANGE ERROR
374 
375                 else if (animalOption >= 4 || animalOption <= 0 )
376                 {
377 
378                     cout << endl;
379                     cout << "**** The number "              << animalOption
380                     << " is an invalid entry     ****" << endl;
381                     cout << "**** Please input a number between 1 and 3 ****";
382                     cout << endl << endl;
383 
384                     checkInp = false;
385 
```

```
386                 }
387
388                 //PASS
389
390                 else
391                 {
392
393                     cin.ignore(numeric_limits<streamsize>::max(), '\n');
394                     checkInp = true;
395
396                 }
397
398             }while(!checkInp);
399
400
401             //if statement if the user wants to change value for Fluffy
402             if(animalOption == 1)
403             {
404                 value1 = ChangeValue();
405
406                 cout << "\nChanging Fluffy's value to " << value1 << "..."
407                      << endl << endl;
408
409                 fluffy.SetValueSheep1(value1);
410             }
411
412
413             //if statement if the user wants to change value for Maa
414             else if(animalOption == 2)
415             {
416                 value2 = ChangeValue();
417
418                 cout << "\nChanging Maa's value to " << value2 << "..." << endl
419                      << endl;
420
421
422                 maa.SetValueSheep2(value2);
423             }
424
425
426             //if statement if the user wants to change value for Babe
427             else if(animalOption == 3)
428             {
429                 valueP = ChangeValue();
430
431                 cout << "\nChanging Babe's value to " << valueP << "..." << endl
432                      << endl;
433
434
435                 babe.SetValuePig(valueP);
436             }
437         }
438
439         //if statement for the fourth option of the menu
440         else if(menuOption == 4)
```

```
441         {
442 
443             cout << endl;
444             cout << left;
445             cout << setw(11) << "ANIMAL" << setw(15) << "NAME" << setw(7)
446                  << "AGE" << setw(8) << "VALUE" << endl;
447             cout << "---------- " << "-------------- " << "--- "
448                  << "----------"
449                  << endl;
450 
451             //these methods outputs the objects of the classes
452 
453             fluffy.PrintSheep1(name1, type1, age1, value1);
454 
455             maa.PrintSheep2(name2, type2, age2, value2);
456 
457             babe.PrintPig(nameP, typeP, ageP, valueP);
458 
459             cout << endl << endl;
460         }
461     }
462 
463 
464     return 0;
465 }
466 
467 
```