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1  #include<stdio.h>
2  #include<stdlib.h>
3  #include<string.h>
4
5  #define ff() while(getchar()!='\n')
6
7  struct Troop{
8      char name[100];
9      int type;
10     Troop *next,*prev;
11 }*head=NULL,*tail=NULL,*curr=NULL;
12
13 Troop *store(char name[],int type){
14     Troop *ret = (Troop*)malloc(sizeof(Troop));
15     strcpy(ret->name,name);
16     ret->type = type;
17     ret->next = ret->prev = NULL;
18     return ret;
19 }
20
21 void pushHead(char name[],int type){
22     curr = store(name,type);
23     if(!head)
24         head = tail = curr;
25     else{
26         curr->next = head;
27         head->prev = curr;
28         head = curr;
29     }
30     head->prev = tail->next = NULL;
31 }
32
33 void pushTail(char name[],int type){
34     curr = store(name,type);
35     if(!head)
36         head = tail = curr;
37     else{
38         tail->next = curr;
39         curr->prev = tail;
40         tail = curr;
41     }
42     head->prev = tail->next = NULL;
43 }
44
45 void prior(char name[],int type){
46     if(!head || head->type < type)pushHead(name,type);
47     else if(tail->type >= type)pushTail(name,type);
48     else{
49         curr = head;
50         while(curr && curr->next->type >= type)
51             curr= curr->next;
52
53         if(curr){
54             Troop *ret = store(name,type);
55             ret->next = curr->next;
56             ret->prev = curr;
57             ret->next->prev = ret;
58             curr->next = ret;
59         }
60     }
61 }
62
63 Troop* popHead(){
64     if(head){
65         curr = head;
66         if(head == tail)
67             head = tail = NULL;
68         else{
69             head = head->next;
70             head->prev = NULL;
71         }
72         return curr;
73     }

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74     return NULL;
75 }
76
77 Troop* popTail(){
78     if(head){
79         curr = tail;
80         if(head == tail)
81             head = tail = NULL;
82         else{
83             tail = tail->prev;
84             tail->next = NULL;
85         }
86         return curr;
87     }
88     return NULL;
89 }
90
91 int getId(char name[]){
92     if(strcmp(name,"Archery") == 0) return 1;
93     else if(strcmp(name,"Magician") == 0) return 2;
94     else if(strcmp(name,"Gladiator") == 0) return 3;
95     return -1;
96 }
97
98 char* getName(int id){
99     switch(id){
100     case 1: return "Archery";
101         break;
102     case 2: return "Magician";
103         break;
104     case 3: return "Gladiator";
105         break;
106     }
107     return NULL;
108 }
109
110 void view(){
111     if(head){
112         int i = 1;
113         curr = head;
114         printf("                List Troops                \n");
115         printf(" ----- \n");
116         printf(" | %-3s | %-20s | %-10s | \n", "No.", "Troop Name", "Type");
117         printf(" ----- \n");
118         while(curr){
119             printf(" | %-2d. | %-20s | %-10s\n", i, curr->name, getName(curr->type));
120             curr = curr->next;
121             i++;
122         }
123         printf(" ----- \n");
124     }
125     else{
126         printf(" No Troop exists ...");
127     }
128 }
129
130 void cls(){
131     for(int i=0;i<30;i++) puts("");
132 }
133
134 int main(){
135     int inp = 0;
136     do{
137         do{
138             cls();
139             view();
140             printf("\n\n");
141             printf(" Keciway Battle\n");
142             printf(" ===== \n\n");
143             printf(" 1. Add Troops\n");
144             printf(" 2. Batte War\n");
145             printf(" 3. Exit\n\n");

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146         printf(" >> ");
147         scanf("%d",&inp);ff();
148     }while(inp < 1 || inp > 3);
149     cls();
150     if(inp == 1){
151         char tempName[100],tempType[100];
152         do{
153             printf(" Input troop name [5..20] : ");
154             scanf("%[^\n]",tempName);ff();
155         }while(strlen(tempName) < 5 || strlen(tempName) > 20);
156         do{
157             printf(" Input troop type [Archery|Magician|Gladiator] : ");
158             scanf("%[^\n]",tempType);ff();
159         }while(strcmp(tempType,"Archery") != 0 && strcmp(tempType,"Magician") !=
0 && strcmp(tempType,"Gladiator") != 0 );
160         prior(tempName,getTypeId(tempType));
161         cls();
162         printf(" New Troop\n");
163         printf(" ----- \n");
164         printf(" Troop Name : %s\n",tempName);
165         printf(" Troop Type : %s\n\n",tempType);
166         printf(" Press enter to continue ..");
167     }
168     else if(inp == 2){
169         curr = popHead();
170         if(curr){
171             printf(" Troop has been dead in war\n");
172             printf(" ----- \n");
173             printf(" Troop Name : %s\n",curr->name);
174             printf(" Troop Type : %s\n\n",getTypeName(curr->type));
175             printf(" Press enter to continue ..");
176             free(curr);
177         }
178         else{
179             printf(" You have no troop ..");
180         }
181     }
182     else if(inp == 3){
183         printf("See you next time ..");
184     }
185     ff();
186 }while(inp != 3);
187
188 return 0;
189 }
190

```