

ARMY COMMAND SYSTEM

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A-) Introduction of Program

Program Language: C++

Main Programs Name: Army Command System

Compiler: Visual Studio

Program Description: Army Command System is a type of management system which controls and observing army structure.

B-) The Purpose of the Program

The focus of the program is creating a command system which overcome from the complex procedures in military command so that procedures will make much simple and more understandable.

Goal and Objectives

We aim to create a new command system. With this system, we aim to decrease the complexity while increasing the privacy of information. Also, to solve this problem we build a new classification like we have seen in military hierarchy. Using this classification, we separate each operation to 4 new classes which Leader, General, Marshal, and Council so that significant data are hidden from unauthorized users. Additionally, using these classes we make sure that each users see the necessary operation options. Thus, our system provides a straightforward interface for users to perform procedures using this new

classification method. This helps to ensure that the process is simple and easy to understand.

Scope

To perform the requested operation user must choose the related class option from the main menu.

To switch between different operations which belong to different classes user must choose these classes one by one.

To see the general information of army, user should choose the *Leader* menu

To see the much-detailed information about *marshal* and *general* user should choose either the *General* or *Marshal* menu.

To make much detailed changes and modifying the army structure user should choose the *Council* menu.

Outline

- In main menu user can access Leader, General, Marshal, Council and Exit options
- In Leader menu user can access the options:
 - The country's eligible population,
 - Change the Conscription Law,
 - See or change the Generals/Marshals of an army/army group

- In General menu user can access the options:
 - See the general`s army divisions and their sizes
 - Change the location of an army
- In Marshal menu user can access the options:
 - Assign/Reassign division to different armies
 - See the Marshal` the generals affiliated with Marshals
- In Council menu user can access the options:
 - Create new divisions
 - See the total number of armies
 - Design/Redesign of armies' templates

C-) Methods

Data Collection

In this project we collect data from the *Hearts of Iron 4* (game) when we are creating the files that are used in our codes.

Code Development

We developed this program take advantage of C++ and OOP on Visual Studio. Each class build independently then combine them using OOP (class, object, inheritance, abstraction...) main concepts. Results are tested changing the files contents and combining different operations in program respectively.

D-) Design

System Design

In this system, '*Country*' class implemented using hybrid inheritance. It consists of Leader, General, Marshal, and Council classes. Also, these four classes come from the Base class. To avoid the Inheritance Ambiguity, 'Base' class implemented as virtual. Each class implementation writes in different header files to abstract the unnecessary code and encapsulate important information.

The class diagram representation of the classes is as follows:



System

*The main screen of the program is as in the figure.

```
Define a Country Name: Turkey
```

*On this screen, we must choose one of the options that we will act on, then program will give. one of the options on the screen

```
1-Leader  
2-General  
3-Marshal  
4-Council  
5-Exit
```

```
Choose your choice(1,2,3,4,5): _
```

1-Leader Menu

* If the user chooses '1', program will give leader's menu to choose one of the options on the screen.

```
a-) See Eligible Core Population  
b-) See Conccription Law  
c-) General Options  
d-) Marshal Options  
e-) Back to main menu  
Choose your choice (a,b,c,d,e): _
```

*If the choice is 'a', user will see core population of the country on the screen.

```
Core Population:
```

```
65540750
```

*If the choice is 'b', user will see conscription laws and populations percentage. Then, user is going to choose one of the current conscription laws to make a change.

```
Currentlaw Disarmed Nation Usable core population 655408
Disarmed Nation          0.01
Volunteer Only           0.015
Limited Conscription     0.025
Extensive Conscription   0.5
Service by Requirement   0.1
All Adults Serve         0.2
Scarping the Barrel      0.25

Choose one the choice to change the current conscription law(1.2...)_
```

*If the choice is 'c', User will get General options menu on the screen, if 1 is selected, Current Generals and their Assign army and Their group will be printed out.

```
1-See currently used Generals and its location
2-Change the Generals
3-Back to the Leader menu

Choose your choice(1,2,3)
1
Erich_von_Manstein      2          2
Poul_Hausser            1          1
```

*If '2' is selected, you will see available generals and chose one of them in order to change the current general by selecting one general. General file is updated afterwards.

```
1-See currently used Generals and its location
2-Change the Generals
3-Back to the Leader menu

Choose your choice(1,2,3)
2
Avaliable Generals to assign
1-Erwin_Rommel
2-Heinz_Guderian
3-Fedor_von_Bock
4-Erwin_von_Witzleben
5-Kurt_Student
6-Albert_Kesseiring
choose general number
3
Current Generals


| General            | Assigned Army | Assigned Army Group |
|--------------------|---------------|---------------------|
| Erich_von_Manstein | 2             | 2                   |
| Poul_Hausser       | 1             | 1                   |


choose current general number
2_
```

*If the choice is 'd', User will get Marshal options menu on the screen. If '1' is selected, Current Marshals and their Assign army and their group will be printed out.

```
1-See currently used Marshals and its location
2-Change the Marshals
3-Back to the Leader menu

Choose your choice(1,2,3)
1


|                    |   |
|--------------------|---|
| Gerd von Rundstedt | 1 |
| Gunther von Kluge  | 2 |


```

*If '2' is selected, you will see available marshals and chose one of them in order to change the current marshal by selecting one marshal. Marshal file is updated afterwards.

```
1-See currently used Marshals and its location
2-Change the Marshals
3-Back to the Leader menu

Choose your choice(1,2,3)
2
Avaliable Marshals to assign
1-Walter Model
choose marshals number
1
Current Marshals
Marshals           Marshals Army Group
Gerd von Rundstedt  1
Gunther von Kluge   2
choose marshal general number
```

2-General Menu

*If the choice from Main menu is 2, user will get to see General's menu and available options to choose one of them.

```
a-) See generals' army divisions
b-) Change the location of the division
c-) Back to the main menu
Choose your choice (a,b,c):
```

*If 'a' is selected, you're going to see Current generals and their assign army numbers with their Total Number of Divisions used. Total Number of Divisions are obtained from Assigned Division text file.

```
Currently used Generals      Assign Army      Total Number Of Divisions Used
*****
1)Erich_von_Manstein        2              3
2)Poul_Hausser              1              4
*****

Press 0 to see the number of generals and division type.
Press 1 to return to general option menu :
0
Enter General Name:
```

*If user choice '0', You should enter General Name to see divisions and their division numbers belongs to that general.

```
General    Poul_Hausser
Division Name      Division Number
*****
1)MotorizedDivision 5
2)MotorizedDivision 6
3)MotorizedDivision 7
*****
```

*If 'b' is selected, you will Get current generals and their assign army numbers. If you input '0', you will change Location of Divisions of Selected that General, and the Assigned division file will be changed.

```
Currently Used Generals          Assign Army
*****
1)Erich_von_Manstein            2
2)Poul_Hausser                  1
*****

Press 0 to change position
Press 1 to return to general option menu :
0
Enter General Number:1
Enter Location:Hakkari
```

3-) Marshal Menu

*If the choice from Main menu is 3, user will get to see Marshal's menu and available options to choose one of them.

```
a-) Reassign divisions
b-) See Marshal
c-) Back to the main menu
Choose your choice (a,b,c):
```

*If 'a' is selected, User will see Current Marshals and their Assigned army group to choose one marshal to assign its division.

```
Marshals                AssignedArmyGroup
1)Gerd von Rundstedt    1
2)Walter Model          2
Choose a Marshal number to assign division Army group: _
```

*After selecting one of the marshals, User will get three options just as shown in the output. User should choose one of the options.

```
Marshals                AssignedArmyGroup
1)Gerd von Rundstedt    1
2)Walter Model          2
Choose a Marshal number to assign division Army group: 2

1)Assing free divisions
2)Reassign division which are in army
3)Back to the Marshal menu

Choose your choice:
```


*If the choice is '1'. Free divisions and Locations will be printed out. Then generals and their assigned Army is printed at the same time. User is going to choose a general and a free division number and assigned army group in order to assign a free division to the Assign division text file.

```
Free divisions                Location of the Divisions
1)InfantryDivision           Ankara
2)InfantryDivision           Ankara
3)InfantryDivision           Ankara
4)ArmorDivision              Ankara
5)ArmorDivision              Ankara
6)MotorizedDivision          Ankara
7)MotorizedDivision          Ankara
8)MotorizedDivision          Ankara

Generals                      AssignedArmy
1)Erich_von_Manstein         2
2)Poul_Hausser               1
Choose a genereal: 1
Choose division and Army number to assign to a genereals'army: 1 2_
```

*If the choice is 2. Assigned divisions, their locations and assigned army numbers will be shown to user to reassign a division by entering new assign army.

```
Assigned Divisions           Location of the divisions           Assing Army
1)ArmorDivision              Bursa                                1
2)ArmorDivision              Bursa                                1
3)ArmorDivision              Bursa                                1
4)ArmorDivision              Bursa                                1
5)MotorizedDivision          Antalya                             2
6)MotorizedDivision          Antalya                             2
7)MotorizedDivision          Antalya                             2
8)InfantryDivision           Ankara                             1
Choose a division and Army number to reassign division to a general's army: 1 2_
```

*If 'b' is selected, User will know the information of marshals and their assign army groups and generals that are in same group belongs to a marshal.

```
Currently used Marshals      Assign in Army Group      Assign generals in ArmyGroup
1)Gerd von Rundstedt        1                          Poul_Hausser
2)Walter Model              2                          Erich_von_Manstein

a-) Reassign divisions
b-) See Marshal
c-) Back to the main menu
Choose your choice (a,b,c): _
```

4-) Council Menu

*If the choice from Main menu is 4, user will get to see Council's menu and available options to choose one of them.

```
a-) Create Divisions
b-) See total number of divisions
c-) Design division templates
d-) Redesign division templates
e-) Back to the main menu
Choose your choice (a,b,c,d,e): _
```

*If the user chooses 'a', The program will print Divisions and Required Manpower of each division and the program will let the user choose one of them and choose

how many of that divisions will be created. After that, Free division text file will be updated according to that decision.

```

Template Name           Required Manpower
-----
1   : ArmorDivision      2240
2   : InfantryDivision    6960
3   : MotorizedDivision    4800

Choose a template # or press 0 to quit: 1

Choose the division size: 3_
```

*If the user chooses b, it will print All Division information's in detailed.

```

### There are 9 ArmorDivision
### There are 3 InfantryDivision
### There are 6 MotorizedDivision

Division Name           Division Number  Assigned/Unassigned
-----
1   : ArmorDivision      1             Assigned
2   : ArmorDivision      2             Assigned
3   : ArmorDivision      3             Assigned
4   : ArmorDivision      4             Assigned
5   : MotorizedDivision   5             Assigned
6   : MotorizedDivision   6             Assigned
7   : MotorizedDivision   7             Assigned
8   : InfantryDivision    8             Assigned
9   : InfantryDivision    9             Unassigned
10  : InfantryDivision    10            Unassigned
11  : ArmorDivision      11            Unassigned
12  : ArmorDivision      12            Unassigned
13  : MotorizedDivision   13            Unassigned
14  : MotorizedDivision   14            Unassigned
15  : MotorizedDivision   15            Unassigned
16  : ArmorDivision      16            Unassigned
17  : ArmorDivision      17            Unassigned
18  : ArmorDivision      18            Unassigned
```

*If the user chooses 'c', you are going to create new template with text file format. Then The program Will print out All battalions and the number of

Required Manpower. Thirdly, the user chooses number of battalions and will write chosen battalion to text file that inputted by the user.

```
Choose a name for template: Template.txt

      Battalion Name                Required Manpower
-----
1    : Mechanized Infantry          780
2    : Armored Infantry             640
3    : Tank Battalion               240
4    : Self-Propelled Artillery      150
5    : Self-Propelled Air Denfence   120
6    : Light Infantry               750
7    : Airborne Light Infantry       750
8    : Marine Light Infantry         750
9    : Special Operation Forces      750
10   : Artillery                    240
11   : Motorized Infantry            800
12   : Motorized Airborne Infantry   800
13   : Motorized Marine Infantry     800

Choose a battalions # or 0 to complete the assign battalions: 4

Choose the # of the battalions: 2_
```

*If the user chooses 'd', The user selects a template name to redesign. Then choose the requested battalion and their size. Finally, files will be updated.

```

      Template Name           Required Manpower
-----
1      : ArmorDivision        2240
2      : InfantryDivision     6960
3      : MotorizedDivision     4800
4      : Template             300

Choose a template number to redesign: 3

      Battalion Name           Required Manpower
-----
1      : Mechanized Infantry   780
2      : Armored Infantry      640
3      : Tank Battalion        240
4      : Self-Propelled Artillery 150
5      : Self-Propelled Air Denfence 120
6      : Light Infantry        750
7      : Airborne Light Infantry 750
8      : Marine Light Infantry  750
9      : Special Operation Forces 750
10     : Artillery             240
11     : Motorized Infantry     800
12     : Motorized Airborne Infantry 800
13     : Motorized Marine Infantry 800

Choose a battalions # or 0 to complete the assign battalions: 0_
```

*If the user choose 'e' program will end.

Errors and Shortcomings

In this project we couldn't add same features:

- Updating the total eligible manpower according to the number of crated divisions
- Adding terrain type, supply usage, battalion speed and their modifiers (effects on division)
- Removing available templates
- Creating new generals/marshals
- Adding traits for each generals/marshal's characteristic

There are some shortcomings in this program all classes depend on each other that's why program is sensitive to small changes in files.

Conclusion

In this project we design an army command system using the C++ and OOP concepts that we learned from the CENG241 course. This system developed for make the complex procedures simple and readable for users. It has a potential to developed to be much efficient and efficient with new features. Despite of all these errors and shortcomings our program satisfies all goals as mentioned in "Goals and Objective" chapter.