KNOWLEDGEBASE ON
WORLD WARS
USING PROLOG

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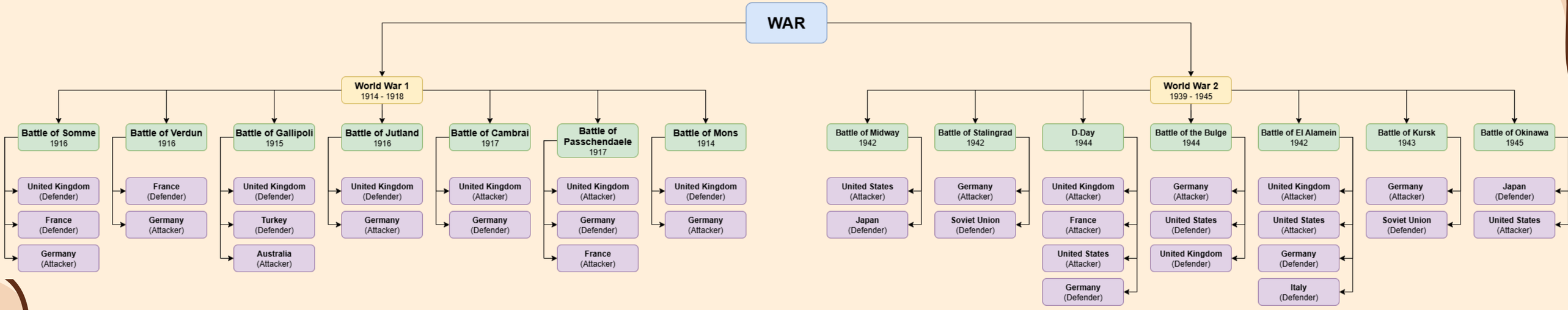
PROBLEM STATEMENT

Information on World War I & II, such as battles, participating countries, alliances, and outcomes, is vast and scattered, making manual retrieval time-consuming and prone to errors.

The project creates a structured Prolog knowledgebase containing battle details, troop numbers and alliances enabling organized storage and logical relationships.

Users can quickly retrieve information such as which countries participated in a battle, their opponents, troop comparisons, and war outcomes using simple Prolog queries.

FAMILY TREE DIAGRAM



TECHNICAL REPORT

Fact:

1. war(WarID, StartYear, EndYear)
2. battle(BattleName, WarID, Year)
3. country(CountryName, TroopsNo)
4. participation(CountryName, Role, BattleName)
5. alliance(Country1, Country2, AllianceID, WarID, AllianceType)

Rules:

1. battles_in_war(WarID, BattleName)
2. countries_in_battle(BattleName, Country)
3. countries_in_war(WarID, Country)
4. wars_of_country(Country, WarID)
5. total_troops(Country1, Country2, Total)
6. war_duration(WarID, Years)
7. side_country(WarID, Side, Country)

SOURCE CODE

```
war(w1, 1914, 1918).
war(w2, 1939, 1945).

battle('Battle of Somme', w1, 1916).
battle('Battle of Verdun', w1, 1916).
battle('Battle of Gallipoli', w1, 1915).
battle('Battle of Jutland', w1, 1916).
battle('Battle of Cambrai', w1, 1917).
battle('Battle of Passchendaele', w1, 1917).
battle('Battle of Mons', w1, 1914).

battle('Battle of Midway', w2, 1942).
battle('Battle of Stalingrad', w2, 1942).
battle('D-Day', w2, 1944).
battle('Battle of the Bulge', w2, 1944).
battle('Battle of El Alamein', w2, 1942).
battle('Battle of Kursk', w2, 1943).
battle('Battle of Okinawa', w2, 1945).

country('United Kingdom', 5000000).
country('France', 4200000).
country('Germany', 8000000).
country('United States', 12000000).
country('Soviet Union', 34000000).
country('Japan', 6000000).
country('Italy', 3500000).
country('Australia', 1000000).
country('Canada', 1100000).
country('Turkey', 700000).
```

```
participation('United Kingdom', defender, 'Battle of Somme').
participation('France', defender, 'Battle of Somme').
participation('Germany', attacker, 'Battle of Somme').

participation('France', defender, 'Battle of Verdun').
participation('Germany', attacker, 'Battle of Verdun').

participation('Turkey', defender, 'Battle of Gallipoli').
participation('Australia', attacker, 'Battle of Gallipoli').
participation('United Kingdom', attacker, 'Battle of Gallipoli').\

participation('United Kingdom', defender, 'Battle of Jutland').
participation('Germany', attacker, 'Battle of Jutland').

participation('United Kingdom', attacker, 'Battle of Cambrai').
participation('Germany', defender, 'Battle of Cambrai').

participation('United Kingdom', attacker, 'Battle of Passchendaele').
participation('France', attacker, 'Battle of Passchendaele').
participation('Germany', defender, 'Battle of Passchendaele').

participation('United Kingdom', defender, 'Battle of Mons').
participation('Germany', attacker, 'Battle of Mons').

% WWII examples
participation('United States', attacker, 'Battle of Midway').
participation('Japan', defender, 'Battle of Midway').
```

SOURCE CODE

```
60  participation('Soviet Union', defender, 'Battle of Stalingrad').
61  participation('Germany', attacker, 'Battle of Stalingrad').
62
63  participation('United States', attacker, 'D-Day').
64  participation('United Kingdom', attacker, 'D-Day').
65  participation('France', attacker, 'D-Day').
66  participation('Germany', defender, 'D-Day').
67
68  participation('Germany', attacker, 'Battle of the Bulge').
69  participation('United States', defender, 'Battle of the Bulge').
70  participation('United Kingdom', defender, 'Battle of the Bulge').
71
72  participation('United Kingdom', attacker, 'Battle of El Alamein').
73  participation('United States', attacker, 'Battle of El Alamein').
74  participation('Germany', defender, 'Battle of El Alamein').
75  participation('Italy', defender, 'Battle of El Alamein').
76
77  participation('Soviet Union', defender, 'Battle of Kursk').
78  participation('Germany', attacker, 'Battle of Kursk').
79
80  participation('United States', attacker, 'Battle of Okinawa').
81  participation('Japan', defender, 'Battle of Okinawa').
```

```
84  alliance('United Kingdom', 'France', a1, w1, allies).
85  alliance('Germany', 'Austria-Hungary', a2, w1, central_powers).
86
87
88  alliance('United States', 'United Kingdom', a3, w2, allies).
89  alliance('Soviet Union', 'United States', a4, w2, allies).
90  alliance('Germany', 'Italy', a5, w2, axis).
91  alliance('Germany', 'Japan', a6, w2, axis).
92
93
94  battles_in_war(WarID, BattleName) :-
95      battle(BattleName, WarID, _).
96
97  countries_in_battle(BattleName, Country) :-
98      participation(Country, _, BattleName).
99
100 countries_in_war(WarID, Country) :-
101     battle(BattleName, WarID, _),
102     countries_in_battle(BattleName, Country).
103
104 wars_of_country(Country, WarID) :-
105     participation(Country, _, BattleName),
106     battle(BattleName, WarID, _).
107
108 total_troops(Country1, Country2, Total) :-
109     country(Country1, Troops1),
110     country(Country2, Troops2),
111     Total is Troops1 + Troops2.
```

SOURCE CODE

```
113  war_duration(WarID, Years) :-
114      war(WarID, Start, End),
115      Years is End - Start + 1.
116
117  side_country(WarID, Side, Country) :-
118      alliance(C1, C2, _AId, WarID, Side),
119      (Country = C1 ; Country = C2).
```

CONCLUSION

Successfully created a Prolog knowledgebase for World War I and II.

Enables quick and accurate retrieval of historical data.

Demonstrates rule-based querying for complex historical relationships.

Developed ER diagram → Prolog facts → Rules workflow.

Applicable to other domains like sports tournaments or archaeological events.

Serves as an educational and research tool for exploring historical data.