

# CS F214 LOGIC IN COMPUTER SCIENCE

## Implementation of US Constitution in Prolog

### Group:

1. Shivam Pande - 2020A7PS0124P.
2. Anish Kulkarni - 2020A7PS0975P.
3. Omkar Gothankar - 2020A7PS0991P.
4. Jash Ranipa - 2020A7PS0119P.
5. Sanchit Kabra - 2020A7PS0010P.

## Implementation of Test Queries

The following test series were given in the Assignment Statement and the screenshots of the output in trace mode along with standard output are given as follows:

### 1. `qualified(X,houseOfRepresentatives).`

```
?- qualified(X, houseOfRepresentatives).  
X = meera ;  
X = leonard ;  
X = george.
```

```
[trace] ?- qualified(X, houseOfRepresentatives).  
Call: (10) qualified(_64628, houseOfRepresentatives) ? creep  
Call: (11) age(_64628, _65072) ? creep  
Exit: (11) age(rohan, 23) ? creep  
Call: (11) 23 >= 25 ? creep  
Fail: (11) 23 >= 25 ? creep  
Redo: (11) age(_64628, _65248) ? creep  
Exit: (11) age(meera, 30) ? creep  
Call: (11) 30 >= 25 ? creep  
Exit: (11) 30 >= 25 ? creep  
Call: (11) citizen(meera, _65424) ? creep  
Exit: (11) citizen(meera, 8) ? creep  
Call: (11) 8 >= 7 ? creep  
Exit: (11) 8 >= 7 ? creep  
Call: (11) chosenState(meera, _65600) ? creep  
Exit: (11) chosenState(meera, newYork) ? creep  
Call: (11) inhabitant(meera, _65688) ? creep  
Exit: (11) inhabitant(meera, massachusetts) ? creep  
Call: (11) newYork\=massachusetts ? creep  
Exit: (11) newYork\=massachusetts ? creep  
Exit: (10) qualified(meera, houseOfRepresentatives) ? creep  
X = meera ;  
Redo: (11) age(_64628, _66734) ? creep  
Exit: (11) age(david, 35) ? creep  
Call: (11) 35 >= 25 ? creep  
Exit: (11) 35 >= 25 ? creep  
Call: (11) citizen(david, _66910) ? creep  
Exit: (11) citizen(david, 35) ? creep  
Call: (11) 35 >= 7 ? creep  
Exit: (11) 35 >= 7 ? creep  
Call: (11) chosenState(david, _67086) ? creep  
Exit: (11) chosenState(david, virginia) ? creep  
Call: (11) inhabitant(david, _67174) ? creep  
Exit: (11) inhabitant(david, virginia) ? creep  
Call: (11) virginia\=virginia ? creep  
Fail: (11) virginia\=virginia ? creep  
Redo: (11) age(_64628, _67350) ? creep  
Exit: (11) age(leonard, 40) ? creep  
Call: (11) 40 >= 25 ? creep  
Exit: (11) 40 >= 25 ? creep  
Call: (11) citizen(leonard, _67526) ? creep  
Exit: (11) citizen(leonard, 40) ? creep  
Call: (11) 40 >= 7 ? creep  
Exit: (11) 40 >= 7 ? creep
```

```

Call: (11) 40 ≥ 7 ? creep
Exit: (11) 40 ≥ 7 ? creep
Call: (11) chosenState(leonard, _67702) ? creep
Exit: (11) chosenState(leonard, northCarolina) ? creep
Call: (11) inhabitant(leonard, _67790) ? creep
Exit: (11) inhabitant(leonard, southCarolina) ? creep
Call: (11) northCarolina\=southCarolina ? creep
Exit: (11) northCarolina\=southCarolina ? creep
Exit: (10) qualified(leonard, houseOfRepresentatives) ? creep
X = leonard ;
Redo: (11) age(_64628, _68836) ? creep
Exit: (11) age(amy, 38) ? creep
Call: (11) 38 ≥ 25 ? creep
Exit: (11) 38 ≥ 25 ? creep
Call: (11) citizen(amy, _69012) ? creep
Exit: (11) citizen(amy, 5) ? creep
Call: (11) 5 ≥ 7 ? creep
Fail: (11) 5 ≥ 7 ? creep
Redo: (11) age(_64628, _69188) ? creep
Exit: (11) age(george, 30) ? creep
Call: (11) 30 ≥ 25 ? creep
Exit: (11) 30 ≥ 25 ? creep
Call: (11) citizen(george, _69364) ? creep
Exit: (11) citizen(george, 30) ? creep
Call: (11) 30 ≥ 7 ? creep
Exit: (11) 30 ≥ 7 ? creep
Call: (11) chosenState(george, _69540) ? creep
Exit: (11) chosenState(george, newJersey) ? creep
Call: (11) inhabitant(george, _69628) ? creep
Exit: (11) inhabitant(george, delware) ? creep
Call: (11) newJersey\=delware ? creep
Exit: (11) newJersey\=delware ? creep
Exit: (10) qualified(george, houseOfRepresentatives) ? creep
X = george.

```

## 2. power(congress,X).

```

?- power(congress,X).
X = legislative ;
X = alterElectionTime ;
X = alterElectionManner ;
X = 'Borrow money on credit' ;
X = 'Regulate commerce' ;
X = 'implement uniform laws on the subject of bankruptcies' ;
X = 'coin money, regulate its value, fix standard of weights and measures' ;
X = 'provide for the punishment of counterfeiting' ;
X = 'establish post office and roads' ;
X = 'provide progress of science and useful arts to authors and inventors' ;
X = 'constitute tribunals inferior to the supreme court' ;
X = 'define and punish piracies and felonies committed on the high seas and offenses against the law of nation' ;
X = 'decree war grant letters of marque and reprisal and make rules concerning captures on land and waters' ;
X = 'make raise and support armies' ;
X = 'provide and maintain a navy' ;
X = 'provide for calling forth the militia to execute the laws of the union suppress insurrections and repel Invasions' ;
X = 'provide for organizing arming and disciplining the Militia' ;
X = 'exercise exclusive Legislation in all Cases whatsoever over such District not exceeding ten Miles square as may by Cession of particular States and the Acceptance of Congress become the Seat of the Government of the United States and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be for the Erection of Forts Magazines Arsenals dock yards and other needful Buildings' ;
X = 'make all Laws necessary for carrying into Execution all Powers vested by Constitution' ;
X = time_of_choosing_electors ;
X = day_of_voting ;
X = to_find_substitute_for_president ;
X = to_find_substitute_for_vice_president ;
X = 'Vest appointment of inferior officers like President, Courts of Law or Head of Departments' ;
X = establishInferiorCourts ;
X = ordainInferiorCourts ;
X = 'declare punishment of treason' ;
X = 'Prescribe manner of proving acts records proceedings of other states and effects thereof' ;
X = 'Dispose or make rules and regulations for territory or property of US' ;
X = proposing_amendments ;
X = mode_of_ratification ;
X = 'Enforce Article 4' ;
X = 'To enforce, by appropriate legislation, the provisions of this article' ;
X = 'enforce article by legislation' ;
X = 'To lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration.' ;
X = 'Enforce Amendment 18' ;
X = 'Enforce Amendment 19' ;
X = 'congress appoint seats of Government for District.' ;
X = 'Enforce Amendment 23' ;
X = 'Enforce Amendment 24' ;
X = 'Enforce Amendment 26'.

```

```
[trace] ?- power(congress,X).
  Call: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, legislative) ? creep
X = legislative ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, alterElectionTime) ? creep
X = alterElectionTime ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, alterElectionManner) ? creep
X = alterElectionManner ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'Borrow money on credit') ? creep
X = 'Borrow money on credit' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'Regulate commerce') ? creep
X = 'Regulate commerce' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'implement uniform laws on the subject of bankruptcies') ? creep
X = 'implement uniform laws on the subject of bankruptcies' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'coin money, regulate its value, fix standard of weights and measures') ? creep
X = 'coin money, regulate its value, fix standard of weights and measures' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'provide for the punishment of counterfeiting') ? creep
X = 'provide for the punishment of counterfeiting' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'establish post office and roads') ? creep
X = 'establish post office and roads' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'provide progress of science and useful arts to authors and inventors') ? creep
X = 'provide progress of science and useful arts to authors and inventors' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'constitute tribunals inferior to the supreme court') ? creep
X = 'constitute tribunals inferior to the supreme court' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'define and punish piracies and felonies committed on the high seas and offenses against the law of nation') ? creep
X = 'define and punish piracies and felonies committed on the high seas and offenses against the law of nation' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'decree war grant letters of marque and reprisal and make rules concerning captures on land and waters') ? creep
X = 'decree war grant letters of marque and reprisal and make rules concerning captures on land and waters' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'make raise and support armies') ? creep
X = 'make raise and support armies' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'provide and maintain a navy') ? creep
```

```
Exit: (10) power(congress, 'provide and maintain a navy') ? creep
X = 'provide and maintain a navy' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'provide for calling forth the militia to execute the laws of the union suppress insurrections and repel Invasions') ? creep
X = 'provide for calling forth the militia to execute the laws of the union suppress insurrections and repel Invasions' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'provide for organizing arming and disciplining the Militia') ? creep
X = 'provide for organizing arming and disciplining the Militia' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'exercise exclusive Legislation in all Cases whatsoever over such District not exceeding ten Miles square as may by Cession of particular States and the Acceptance of Congress become the Seat of the Government of the United States and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be for the Erection of Forts Magazines Arsenals dock yards and other needful Buildings') ? creep
X = 'exercise exclusive Legislation in all Cases whatsoever over such District not exceeding ten Miles square as may by Cession of particular States and the Acceptance of Congress become the Seat of the Government of the United States and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be for the Erection of Forts Magazines Arsenals dock yards and other needful Buildings' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'make all Laws necessary for carrying into Execution all Powers vested by Constitution') ? creep
X = 'make all Laws necessary for carrying into Execution all Powers vested by Constitution' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, time_of_choosing_electors) ? creep
X = time_of_choosing_electors ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, day_of_voting) ? creep
X = day_of_voting ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, to_find_substitute_for_president) ? creep
X = to_find_substitute_for_president ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, to_find_substitute_for_vice_president) ? creep
X = to_find_substitute_for_vice_president ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'Vest appointment of inferior officers like President, Courts of Law or Head of Departments') ? creep
X = 'Vest appointment of inferior officers like President, Courts of Law or Head of Departments' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, establishInferiorCourts) ? creep
X = establishInferiorCourts ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, ordainInferiorCourts) ? creep
X = ordainInferiorCourts ;
  Redo: (10) power(congress, _86648) ? creep
  Call: (11) congress=one_supreme_court ? creep
  Fail: (11) congress=one_supreme_court ? Unknown option (h for help)
  Redo: (11) congress=one_supreme_court ? creep
  Redo: (10) power(congress, _86648) ? creep
  Call: (11) _86648='declare punishment of treason' ? Unknown option (h for help)
  Call: (11) _86648='declare punishment of treason' ? creep
```

```
Redo: (10) power(congress, _86648) ? creep
Exit: (10) power(congress, 'congress appoint seats of Government for District.') ? creep
X = 'congress appoint seats of Government for District.' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'Enforce Amendment 23') ? creep
X = 'Enforce Amendment 23' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'Enforce Amendment 24') ? creep
X = 'Enforce Amendment 24' ;
  Redo: (10) power(congress, _86648) ? creep
  Exit: (10) power(congress, 'Enforce Amendment 26') ? creep
X = 'Enforce Amendment 26'.
```



### 3. executivePower(X).

```
?- executivePower(X).  
X = president.
```

```
[trace] ?- executivePower(X).  
  Call: (10) executivePower(_133406) ? creep  
  Exit: (10) executivePower(president) ? creep  
X = president.
```

### 4. right(george,X).

```
?- right(george,X).  
X = privileges ;  
X = immunities ;  
X = secure_in_persons ;  
X = secure_in_homes ;  
X = secure_in_papers ;  
X = secure_in_effects ;  
X = against_unreasonable_searches_and_against_seizures ;  
X = no_warrants_issued ;  
X = speedy_and_public_trial ;  
X = impartial_jury ;  
X = assistance_of_Counsel_for_defense ;  
X = information_about_nature_of_accusation ;  
X = obtain_witnesses_in_favour ;  
X = state_cannot_deprive_of_life_liberty_property_without_process_of_law ;  
X = cannot_deny_equal_protection_of_laws ;  
X = right_to_vote.
```

```
[trace] ?- right(george,X).  
  Call: (10) right(george, _59798) ? creep  
  Call: (11) citizen(george, _60236) ? creep  
  Exit: (11) citizen(george, 30) ? creep  
  Call: (11) _59798=privileges ? creep  
  Exit: (11) privileges=privileges ? creep  
  Exit: (10) right(george, privileges) ? creep  
X = privileges ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) _59798=immunities ? creep  
  Exit: (11) immunities=immunities ? creep  
  Exit: (10) right(george, immunities) ? creep  
X = immunities ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) citizen(george, _62328) ? creep  
  Exit: (11) citizen(george, 30) ? creep  
  Call: (11) _59798=secure_in_persons ? creep  
  Exit: (11) secure_in_persons=secure_in_persons ? creep  
  Exit: (10) right(george, secure_in_persons) ? creep  
X = secure_in_persons ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) _59798=secure_in_homes ? creep  
  Exit: (11) secure_in_homes=secure_in_homes ? creep  
  Exit: (10) right(george, secure_in_homes) ? creep  
X = secure_in_homes ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) _59798=secure_in_papers ? creep  
  Exit: (11) secure_in_papers=secure_in_papers ? creep  
  Exit: (10) right(george, secure_in_papers) ? creep  
X = secure_in_papers ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) _59798=secure_in_effects ? creep  
  Exit: (11) secure_in_effects=secure_in_effects ? creep  
  Exit: (10) right(george, secure_in_effects) ? creep  
X = secure_in_effects ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) _59798=against_unreasonable_searches_and_against_seizures ? creep  
  Exit: (11) against_unreasonable_searches_and_against_seizures=against_unreasonable_searches_and_against_seizures ? creep  
  Exit: (10) right(george, against_unreasonable_searches_and_against_seizures) ? creep  
X = against_unreasonable_searches_and_against_seizures ;  
  Redo: (10) right(george, _59798) ? creep  
  Call: (11) _59798=no_warrants_issued ? creep  
  Exit: (11) no_warrants_issued=no_warrants_issued ? creep  
  Exit: (10) right(george, no_warrants_issued) ? creep  
X = no_warrants_issued ;  
  Redo: (10) right(george, _59798) ? creep
```

```

Redo: (10) right(george, _59798) ? creep
Call: (11) citizen(george, _68428) ? creep
Exit: (11) citizen(george, 30) ? creep
Call: (11) _59798=speedy_and_public_trial ? creep
Exit: (11) speedy_and_public_trial=speedy_and_public_trial ? creep
Exit: (10) right(george, speedy_and_public_trial) ? creep
X = speedy_and_public_trial ;
Redo: (10) right(george, _59798) ? creep
Call: (11) _59798=impartial_jury ? creep
Exit: (11) impartial_jury=impartial_jury ? creep
Exit: (10) right(george, impartial_jury) ? creep
X = impartial_jury ;
Redo: (10) right(george, _59798) ? creep
Call: (11) _59798=assistance_of_Counsel_for_defense ? creep
Exit: (11) assistance_of_Counsel_for_defense=assistance_of_Counsel_for_defense ? creep
Exit: (10) right(george, assistance_of_Counsel_for_defense) ? creep
X = assistance_of_Counsel_for_defense ;
Redo: (10) right(george, _59798) ? creep
Call: (11) _59798=information_about_nature_of_accusation ? creep
Exit: (11) information_about_nature_of_accusation=information_about_nature_of_accusation ? creep
Exit: (10) right(george, information_about_nature_of_accusation) ? creep
X = information_about_nature_of_accusation ;
Redo: (10) right(george, _59798) ? creep
Call: (11) _59798=obtain_witnesses_in_favour ? creep
Exit: (11) obtain_witnesses_in_favour=obtain_witnesses_in_favour ? creep
Exit: (10) right(george, obtain_witnesses_in_favour) ? creep
X = obtain_witnesses_in_favour ;
Redo: (10) right(george, _59798) ? creep
Call: (11) citizen(george, _73526) ? creep
Exit: (11) citizen(george, 30) ? creep
Call: (11) _59798=state_cannot_deprive_of_life_liberty_property_without_process_of_law ? creep
Exit: (11) state_cannot_deprive_of_life_liberty_property_without_process_of_law=state_cannot_deprive_of_life_liberty_property_without_process_of_law ? creep
Exit: (10) right(george, state_cannot_deprive_of_life_liberty_property_without_process_of_law) ? creep
X = state_cannot_deprive_of_life_liberty_property_without_process_of_law ;
Redo: (10) right(george, _59798) ? creep
Call: (11) _59798=cannot_deny_equal_protection_of_laws ? creep
Exit: (11) cannot_deny_equal_protection_of_laws=cannot_deny_equal_protection_of_laws ? creep
Exit: (10) right(george, cannot_deny_equal_protection_of_laws) ? creep
X = cannot_deny_equal_protection_of_laws ;
Redo: (10) right(george, _59798) ? creep
Call: (11) citizen(george, _75618) ? creep
Exit: (11) citizen(george, 30) ? creep
Call: (11) _59798=right_to_vote ? creep
Exit: (11) right_to_vote=right_to_vote ? creep
Exit: (10) right(george, right_to_vote) ? creep
X = right_to_vote.

```

## 5. protectionAgainstInvasion(georgia).

```

?- protectionAgainstInvasion(georgia).
true.

```

```

[trace] ?- protectionAgainstInvasion(georgia).
  Call: (10) protectionAgainstInvasion(georgia) ? creep
  Call: (11) stateOfUS(georgia) ? creep
  Exit: (11) stateOfUS(georgia) ? creep
  Exit: (10) protectionAgainstInvasion(georgia) ? creep
true.

```

## 6. commanderInChiefOfArmy(X).

```

?- commanderInChiefOfArmy(X).
X = president.

```

```

[trace] ?- commanderInChiefOfArmy(X).
  Call: (10) commanderInChiefOfArmy(_153236) ? creep
  Exit: (10) commanderInChiefOfArmy(president) ? creep
X = president.

```

## 7. power(X,grant(pardon(offenseAgainstUS))).

```
?- power(X, grant(pardon(offenseAgainstUS))).
X = president ;
false.
```

```
[trace] ?- power(X, grant(pardon(offenseAgainstUS))).
Call: (10) power(_4670, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=judge_of_elections ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=judge_of_elections ? creep
Redo: (10) power(house, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=judge_of_returns ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=judge_of_returns ? creep
Redo: (10) power(house, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=qualification_of_members ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=qualification_of_members ? creep
Redo: (10) power(house, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=det_rules_proceedings ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=det_rules_proceedings ? creep
Redo: (10) power(house, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=punish_disorderly_behavior ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=punish_disorderly_behavior ? creep
Redo: (10) power(house, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=expel_members_concurrence_twothirds ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=expel_members_concurrence_twothirds ? creep
Redo: (10) power(_4670, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=adjourn_house ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=adjourn_house ? creep
Redo: (10) power(smaller_num_of_houseMembers, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))=compel_attendance ? creep
Fail: (11) grant(pardon(offenseAgainstUS))=compel_attendance ? creep
Redo: (10) power(_4670, grant(pardon(offenseAgainstUS))) ? creep
Exit: (10) power(president, grant(pardon(offenseAgainstUS))) ? creep
X = president ;
Redo: (10) power(_4670, grant(pardon(offenseAgainstUS))) ? creep
Call: (11) grant(pardon(offenseAgainstUS))='declare punishment of treason' ? creep
Fail: (11) grant(pardon(offenseAgainstUS))='declare punishment of treason' ? creep
Fail: (10) power(_4670, grant(pardon(offenseAgainstUS))) ? creep
false.
```

## 8. power(northCarolina,collect(tax)).

```
?- power(northCarolina, collect(tax)).
true.
```

```
[trace] ?- power(northCarolina, collect(tax)).
Call: (10) power(northCarolina, collect(tax)) ? creep
Call: (11) stateOfUS(northCarolina) ? creep
Exit: (11) stateOfUS(northCarolina) ? creep
Exit: (10) power(northCarolina, collect(tax)) ? creep
true.
```

## 9. presidentOfSenate(X).

```
?- presidentOfSenate(X).
X = vicePresidentOfUnitedStates.
```

```
[trace] ?- presidentOfSenate(X).  
  Call: (10) presidentOfSenate(_127404) ? creep  
  Exit: (10) presidentOfSenate(vicePresidentOfUnitedStates) ? creep  
X = vicePresidentOfUnitedStates.
```

## 10. meetingOfCongress(D,M,2019).

```
?- meetingOfCongress(D, M, 2019).  
true ;  
D = 2,  
M = december.
```

```
[trace] ?- meetingOfCongress(D, M, 2019).  
  Call: (10) meetingOfCongress(_125056, _125058, 2019) ? creep  
  Exit: (10) meetingOfCongress(_125056, _125058, 2019) ? creep  
true ;  
  Redo: (10) meetingOfCongress(_125056, _125058, 2019) ? creep  
  Exit: (10) meetingOfCongress(2, december, 2019) ? creep  
D = 2,  
M = december.
```