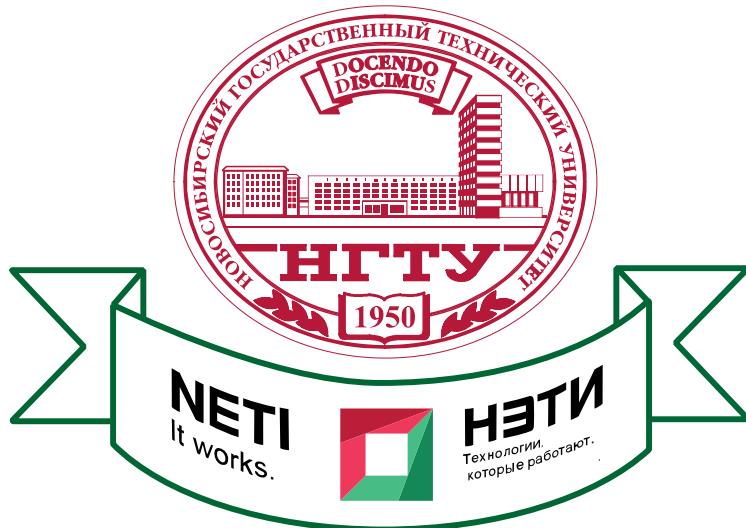


Министерство науки и высшего образования  
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Федеральное государственное бюджетное  
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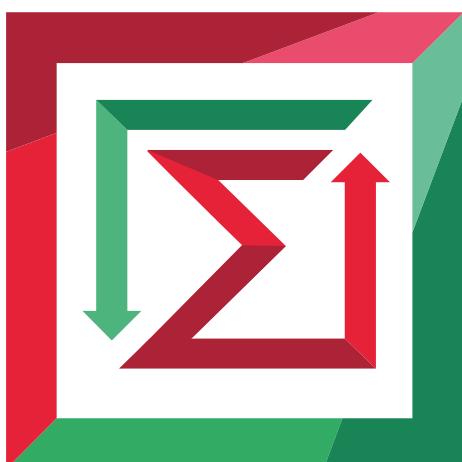
«НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»



Теоретической и прикладной информатики

Лабораторная работа № 4  
по дисциплине «Интеллектуальные системы»

### ВЫВОД ПО АНАЛОГИИ



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## 1. Цель работы

Изучение аналогии как механизма вывода, используемого в интеллектуальных системах.

## 2. Задание

Реализуйте на Прологе базовый механизм вывода по аналогии, который способен на основе precedента давать ответ на поставленный вопрос.

## 3. Вариант задания

По аналогии с парой предложений: «He is men.», «Is he men?» написать программу перевода утвердительного простого английского предложения в вопросительное.

## 4. Листинг программы

```
analogy(is_to(L1,L2), is_to(L3,X), Rule) :-  
    match(affirmative(L1), interrogative(L2), Rule),  
    match(affirmative(L3), interrogative(X), Rule).  
  
run(S1, S2, S3):-  
    consult('c:/Users/Daniel/Desktop/lab4/match.db'),  
    write(S1), write(' > '), write(S2), nl,  
    split_string(S1, " ", ".", L1),  
    split_string(S2, " ", "?", L2),  
    split_string(S3, " ", ".", L3),  
    analogy(is_to(L1,L2), is_to(L3,X), Rule),  
    atomic_list_concat(X, ' ', Sentence),  
    write(S3), write(' > '), write(Sentence), write("?" ), nl,  
    write('Rule > '), write(Rule), !.
```

### match.db:

```
match(affirmative(["He", "is" | X]), interrogative(["Is", "he" | X]), 'pronoun "He" in Present').  
match(affirmative([W1, "is" | X]), interrogative(["Is", W1 | X]), 'pronoun UNKNOWN in Present').  
match(affirmative(["He", V1 | X]), interrogative([V1, "he" | X]), 'verb UNKNOWN in Present').
```

## 5. Тестирование

```
?- run('He is big white bear.', 'Is he big white bear?', 'He is my friend.' ).  
He is big white bear. > Is he big white bear?  
He is my friend. > Is he my friend?  
Rule > pronoun "He" in Present  
true.  
  
?- ■  
?- run('She was big white bear.', 'Was she big white bear?', 'She was my friend.' ).  
She was big white bear. > Was she big white bear?  
She was my friend. > Was she my friend?  
Rule > pronoun "She" in Past  
true.  
?- ■
```

?- run('It will be big and scary.', 'Will it be big and scary?', 'It will be my friend.').  
It will be big and scary. > Will it be big and scary?

It will be my friend. > Will it be my friend?  
Rule > pronoun "It" in Future Continuous

**true.**

?- run('He has been studying Spanish for the past six months.', 'Has he been studying Spanish for the past six months?', 'He has been driving.').

He has been studying Spanish for the past six months. > Has he been studying Spanish for the past six months?

He has been driving. > Has he been driving?

Rule > pronoun "He" in Present Perfect Continuous

**true.**

?- run('Anna is girl.', 'Is Anna girl?', 'Pavel is man.').

Anna is girl. > Is Anna girl?

Pavel is man. > Is Pavel man?

Rule > pronoun UNKNOWN in Present

**true.**

?- run('He can drive.', 'can he drive?', 'She can swim.').

He can drive. > can he drive?

She can swim. > can she swim?

Rule > verb UNKNOWN in Present

**true.**