ARTIFICIAL INTELLIGENCE SESSIONAL

Course Code: CSE 4111

LAB REPORT

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Experiment No. 1

Title: Arithmetic Operations Using Python

Objective: To perform addition, subtraction, multiplication, and division using Python.

Algorithm:

1. Input two numbers.
2. Apply arithmetic operators.
3. Display results.

Program:

```
a = int(input("Enter␣first␣number:␣"))
b = int(input("Enter␣second␣number:␣"))

print("Addition␣=", a + b)
print("Subtraction␣=", a - b)
print("Multiplication␣=", a * b)
print("Division␣=", a / b)
```

Output:

```
Enter first number: 10
Enter second number: 5
Addition = 15
Subtraction = 5
Multiplication = 50
Division = 2.0
```

Conclusion: Arithmetic operations were successfully performed using Python.

Experiment No. 2

Title: Arithmetic Operations Using Prolog

Objective: To perform subtraction and multiplication using Prolog.

Program:

```
subtract(A,B,R) :- R is A-B.
multiply(A,B,R) :- R is A*B.
```

Output:

```
?- subtract(10,5,R).
R = 5.

?- multiply(4,3,R).
R = 12.
```

Conclusion: Prolog successfully handled arithmetic operations.

Experiment No. 3

Title: Addition of Two Numbers Using Prolog

Objective: To add two numbers using Prolog.

Program:

```
add(A,B,R) :- R is A+B.
```

Output:

```
?- add(5,7,R).
R = 12.
```

Conclusion: Addition was implemented successfully.

Experiment No. 4

Title: Sum of Elements in a List Using Prolog

Objective: To calculate sum of list elements.

Program:

```
sumlist([],0).
sumlist([H|T],S):- sumlist(T,S1), S is H+S1.
```

Output:

```
?- sumlist([1,2,3,4,5],S).
S = 15.
```

Conclusion: Recursive list processing was achieved.

Experiment No. 5

Title: Reverse a Number Using Python

Objective: To reverse a given number.

Program:

```
n = int(input("Enter number: "))
rev = 0
while n > 0:
    rev = rev*10 + n%10
    n = n//10
print("Reversed number =", rev)
```

Output:

```
Enter number: 1234
Reversed number = 4321
```

Conclusion: Number reversal was successful.

Experiment No. 6

Title: FOL Conversion and Prolog Implementation

Objective: To represent facts and rules using Prolog.

Facts and Rules:

```
likes(sakib, football).
likes(sabbir, fruits).
likes(sabbir, X):- likes(_, football).
likes(sakib, X):- likes(sabbir, X).
```

Query and Output:

```
?- likes(sakib, X).
X = fruits.
```

Conclusion: Logical reasoning was successfully implemented.

Experiment No. 7

Title: Family Relationship Representation Using Prolog

Objective: To represent family relations.

Facts:

```
brother(rashid, tamim).
man(rashid).
woman(champa).
```

Queries and Output:

```
?- man(X).
X = rashid.

?- woman(X).
X = champa.
```

Conclusion: Family relations were modeled correctly.

Experiment No. 8

Title: ELIZA Chatbot Implementation

Objective: To simulate human conversation.

Program:

```
response("hello","Hello! How are you?").
response("sad","Why are you feeling sad?").
response("bye","Goodbye!").
```

Sample Interaction:

```
User: hello
Bot: Hello! How are you?
```

Conclusion: A simple ELIZA chatbot was successfully implemented.