



Smt. Indira Gandhi College of Engineering
Ghansoli – Navi Mumbai
Computer Engineering Department
Academic Year 2022-23 (Even Sem)

Student Name: Aryan Mishra **Roll No:** 54 **Class:** TE **Sem:** VI

Course Name: Artificial Intelligence Lab

Course Code: CSL604

Experiment No. 06

Experiment Title: INTRODUCTION TO PROLOG PROGRAMMING &
BASIC PROGRAMMING IN PROLOG

Date of Performance	Date of Submission	Marks (10)					Sign / Remark
		A	B	C	D	E	
		2	3	2	2	1	
		Total Marks					

A: On Time Submission

B: Understanding

C: Analytical Skill

D: Critical Thinking

E: Presentation



Date:

Ar
Sh
Mohan
Nishan

Date

Experiment no 6

Signature

Title : Introduction to Prolog
Programming and how
to solve logic

Aims: To study and Prolog programming and how
programming in Prolog

Theory:

Prolog stands for programming in logic

1) Prolog has the ability to infer facts from the given
facts and rules

→ To solve the logic programming which has been
observed in Prolog

Components of Prolog

① Constant: Numerical constants such as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

② Statement: Statement of Prolog contains single Prolog

3) Function and predicate names: Start with capital
and function by lower lowercase case 19/1/20
Numerical and operator (-)

Clause (Facts, Rules) is terminated by end (:-)



Date: _____

Ac
Sh

⑥ Paolo's control strategy
↳ Sloppy First Answer

Paolo controls whole control strategies

- Forward Movement
- Backward Movement
- Backward Movement

Conclusion:

Studying Paolo's programme can help us understand the
and can be used as the ~~longer~~ ~~or~~ ~~can~~ concept of it is
a powerful tool to solve complex problems that even
designers, such as ~~the~~ ~~longer~~ ~~or~~ ~~can~~ ~~concept~~ ~~of~~ ~~it~~ ~~is~~

1. SUM OF N NATURAL NOS. USING RECURSION

```
sum_n(0, 0).
sum_n(N, Sum) :-
    N > 0,
    N1 is N - 1,
    sum_n(N1, Sum1),
    Sum is N + Sum1.
```

```
GNU Prolog 1.5.0 (64 bits)
Compiled Jul  8 2021, 12:33:56 with cl
Copyright (C) 1999-2021 Daniel Diaz

compiling C:/GNU-Prolog/examples/ExamplesC/examp.pl for byte code...
C:/GNU-Prolog/examples/ExamplesC/examp.pl compiled, 6 lines read - 836 bytes written, 11 ms
| ?- sum_n(5,Sum).
Sum = 15 ? |
```

2. COMPUTING FACTORIAL OF A POSITIVE NUMBER

```
fact(0,1).
fact(N,F):-
(
    N>0 ->
    (
        N1 is N-1,
        fact(N1,F1),
        F is N*F1
    )
).
```

```
GNU Prolog 1.5.0 (64 bits)
Compiled Jul  8 2021, 12:33:56 with cl
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compiling C:/GNU-Prolog/examples/ExamplesC/examp.pl for byte code...
C:/GNU-Prolog/examples/ExamplesC/examp.pl compiled, 11 lines read - 875 bytes written, 11 ms
| ?- fact(5,F).
F = 120 ? |
```

3. ADD THE ELEMENTS OF AN INTEGER LIST

```
sum_list([], 0).
sum_list([H|T], Sum) :-
    sum_list(T, Rest),
    Sum is H + Rest.
```

```

GNU Prolog 1.5.0 (64 bits)
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compiling C:/GNU-Prolog/examples/ExamplesC/examp.pl for byte code...
C:/GNU-Prolog/examples/ExamplesC/examp.pl compiled, 3 lines read - 652 bytes written, 10 ms
error: C:/GNU-Prolog/examples/ExamplesC/examp.pl:1: native code procedure sum_list/2 cannot be redefined (ignore)
| ?- sum_list([1, 2, 3, 4, 5], Sum).

Sum = 15
yes
| ?- |

```

4. COMPUTE THE LENGTH OF A LIST.

```

length([], 0).
length([_|T], N) :-
    length(T, N1),
    N is N1 + 1.

```

```

GNU Prolog 1.5.0 (64 bits)
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compiling C:/GNU-Prolog/examples/ExamplesC/examp.pl for byte code...
C:/GNU-Prolog/examples/ExamplesC/examp.pl compiled, 3 lines read - 634 bytes written, 8 ms
error: C:/GNU-Prolog/examples/ExamplesC/examp.pl:1: native code procedure length/2 cannot be redefined (ignore)
| ?- length([1, 2, 3, 4, 5], N).

N = 5
yes
| ?-

```

5. DETERMINE IF A GIVEN VALUE IS A MEMBER OF THE LIST

```

member(X, [X|_]).
member(X, [_|T]) :- member(X, T).

```

```

GNU Prolog 1.5.0 (64 bits)
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compiling C:/GNU-Prolog/examples/ExamplesC/examp.pl for byte code...
C:/GNU-Prolog/examples/ExamplesC/examp.pl compiled, 1 lines read - 444 bytes written, 7 ms
error: C:/GNU-Prolog/examples/ExamplesC/examp.pl:1: native code procedure member/2 cannot be redefined (ignore)
| ?- member(3, [1, 2, 3, 4, 5]).

true ?
yes
| ?- member(6, [1, 2, 3, 4, 5]).

no
| ?- |

```