



# Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India  
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned				
		L	T	P	L	T	P	Total	
CPCL601	System Programming and Compiler Construction Lab	--	--	2	--	--	1	1	
		Examination Scheme							Total
		ISE		ESE			Total		
				Practical	Oral				
		40	20		-	60			

<b>Pre-requisite Course Codes</b>	CPC601 (System Programming and Compiler Construction)
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At end of successful completion of this course, student will be able to

Course Outcomes	CO1	To use Flex or similar tools to create a lexical analyzer and Yacc/Bison tools to create a parser.
	CO2	To implement different types of handwritten parsers.
	CO3	To implement the working of assembler and Macros.
	CO4	To demonstrate linkers and loaders.

Exp. No.	Experiment Details	Ref.	Marks
1	Lex program to generate tokens (identifiers, keywords, operators, delimiters, etc.) for Java Programming language. Program should generate at least 50 tokens and it should recognize unique identifiers.	1	5
2	Program to remove left recursion for the given grammar. Program should accept the grammar from user, detect left recursion and eliminate it by generating a new non-terminal.	3,4	5
3	Implement Predictive Parser for the given grammar.	3,4	5
4	Program to find first and follow sets for the given grammar. Program should accept the grammar from user and output the first and follow sets for each of the grammar symbol.	3,4	5
5	Program to generate Quadruple table for the given postfix String	3,4	5
6	Implement two pass Assembler for IBM 360/370 machine. The input is a source consisting of syntactically correct IBM 360/370 statement. The output should display all tables and their values. The final output is an object file of small subset of instructions.	2	5
7	Implement MACRO Assembler for IBM 360/370 for the feature "Conditional MACRO expansion".	2	5
8	Create user defined library in open source environment and use it for		5



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particular functions.		
	<b>Total Marks</b>	<b>40</b>

## References:

- [1] John R. Levine, Tony Mason & Doug Brown O'Reilly, "*lex & yacc*", 2nd Edition
- [2] J. J Donovan, "Systems Programming" Tata McGraw Hill Publications.
- [3] A. V. Aho, R. Shethi and J.D. Ulman, "Compilers Principles, Techniques and Tools" ,  
Pearson Education
- [4] A. V. Aho, R. Shethi, Monica Lam , J.D. Ulman, "Compilers Principles, Techniques and  
Tools", Pearson Education, Second Edition.