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## CS606 FINAL TERM PAPER SHARED BY STUDENT

### CS606 ///MARCH 3 2017

1. Identify, whether the following grammar is LR(1) or LL(1)?
S---Aca | Bcb
A---c...
B----c

2. How a fliw graph can be a Reducible Flow Graph?
3. What is LR(1) parsing and discuss main advantage?
4. Characteristics of Live variables?
5. Which information we get from 1st section of YACC File?
6. context free parsing context sensitive parsing?
7. Aik compiler se related tha
8. Traverse the following tree in Inorder. Or sath m tree be dia huwa th Same tree jo k Paper 2012 m 43 Q m ha


## CS606 FINAL TERM PAPER SHARED BY STUDENT

### MERA AAJ (29-08-2016) KA PAPER.

Zyada mcqs past waly thy, moazz or Zain ki files me se.

Subject me se,

1. Discuss properties of reduce flow?

Name the IR closest to program code?

P --> RL(1), Suppose DFA recognize it?

why we break source code to machine language?

kuch code thy, mere waly to 5 marks waly 3 or 3 marks waly 2 code thy, jo me ne ni kiye.....

Is k ilawa kuch practice ha past papers ki jis me me ne Kuch question or un k answer search kiye thy.. Ho saqta ha apko is se faida ho jae...

Wo han,

**My File:**

**SHAAN.**

What does the compiler need to consider when applying optimization?

Answer:

The compiler needs to minimize or maximize some attributes in an executeable program. It is better to minimize the time taken to execute the program. Also to minimize the occupied memory.

Define NFA?


Non finite autometa is autometa theory with finite states . It has an initial state and and trascition state. It is used to automate the things. It does not tell the exact location to which the machine is rotated. It can be converted to dfa.

In Main memory, what type of information is stored in data segement?

In memory the code generated by the intermediate Representation is stored. It include the source file, which contain the tokenized symbol, variable, objects and other parse data. This code is very near to the machine language.

Identify whether the grammer is LR(1) and LL(1)?

S->Aa|Bb

A->c

B->c

The grammer is LR 1 grammer. It gives the output cach.

Characteristics of Live variables?

Live variable are the variable in an object that can be used for further use.

The characteristics of live variable are;

They help in calculation of each variable in the compiler.

Algorithm to generate LALR(1) DFA?

Answer: Algorithm to generate LALR1 DFA is below:

1. Repeat until all the states have distinct code.
2. Choose two distinct states with same core.


3. Merge these states by a new state having union of all items.
4. New state points all previous states.

Which information we get from 3rd section of YACC File?

Answer:

The first information we get about it's definition

2nd percentage. Rules percentage.

3rd c/C++ statements.

How can complier transformation improve program?

Answer:

Compiler transformation improves program, by reducing its unnecessary attributes. The main requirement of a program is to reduce the run time of program. Another less necessaaary is to occupy less memory on program. The garbage collection should work perfect way.

LL Parse table ?


INT and BOOl main sy bhi tha 5 marks ka ?

For each instruction, show which variable are live variable are live imidiately after instruction execution

(5marks)

1. A=7

2. B=A+2

3. C=A+B

4.D=C+B

5.B=C+B

Answer

Live {A}

A=7

Live {A}

B=A+2

Live{A,B}

C={A+B}

Live{C,B}


D=C+B

Live={C,B}

B={C+B}

Live={ A,B,C}

tree was given and preorder was asked?

what is non determininstic fa?

Answer: Non finite autometa is autometa theory with finite states . It has an initial state and and transition state. It is used to automate the things. It does not tell the exact location to which the machine is stated. It can be converted to dfa.

productions were given and canonical collection set was asked to built using productions.

action table and goto table were given we were asked to show in stack and input buffer

when we use garbage collection for memory management?

Answer:

It is an automatic memory management tool. We use the garbage collection for memory management to reduce the extra memory occupied by the program at run time and the objects that are no longer exist in program. It allocate and deallocate the memory to a program.


if on right hand side of production there are k symbols then how many positions are there for place holder?

Answer:

If the right hand side of production there are k symbols then the position on the placeholder will be k+1.

production was given to determine whether this is of LR(1) or LL(1) ?

code was given and we have to find basic blocks?

use of address descriptor in code generation algorithm of 5 marks

Register descriptor provides status (empty , in use ) or the content one or more registers in a program.

While address descriptor provides the specific address to where the current value can be find.

Third section of YACC represents what kind of information?

**Answer:**

Definitions
%% rules %%
C/C++ functions

How inherited attribute are different synthesized with respect to grammar attribute?


Answer:

Inherited attributes are different then synthesized with respect to the following main reasons.

1. On the base of direction of flow value.
2. On the base of parsing tree. (Syn follows bottom up, while inherited follows top down parsing technique.)

**(**Attributes are distinguished based on the direction of value flow. Attributes of a node whose values are defined wholly in terms of attributes of node's children and from constants are called synthesized attributes. Values used to compute synthesized attributes flow bottom-up in the parse tree.

Attributes whose values are defined in terms of a node's own attributes, node's siblings and node's parent are called inherited attributes. Values flow top-down and laterally in the parse tree. The following attributed tree shows the inherited and synthesized attributes for the input signed binary number -101. **)**

how context free parsing is different from context sensitive parsing?

Answer:

**Context Free parsing:**

It is a formal parsing in which each context is in form of Vàw. Where V in a non terminal and w may be both non terminal and terminal, it's value may be zero.


**Context sensitive language** is a formal context grammar in which each left hand side and right hand side of production rules is surrounded by the context in case of terminal and non-terminal. In

Brief note on Reducible Flow Graphs?

For each instruction, show which variable are live variable are live imidiately after instruction execution

what are basic operation of shift reduce parser to parser a CFG ? explpain activities how they performe?

Answer:

Shift moves ► one place to the right which shifts a terminal to the left string

E + (► int) ⇒ E + (int ►)

In the reduce action, the parser applies an inverse production at the right end of the left string. If E → E + (E) is a production, then

E + ( E+(E)►) ⇒ E + ( E ►)

The basic operation of shift reduce parser in CFG are.


One symbol lookahead and indicates either the value should be shift or reduce. In case of shift a symbol pushes to the stack that is increased by one and lookahead for next symbol. It that symbol needed to reduce then the stack comes to its on position.

LL() table was give. show content of stack and input buffer for parse of string "ab"where s is start symbol?

This is just for your help in final exams.

## CS606 FINAL TERM PAPER SHARED BY STUDENT

### ON AUGUST 20, 2016 AT 7:19PM

aoa 80% mcqs were past papers.
Q Which information we get from the second YACC file?
Q Which type of information is store in memory of code segment.
Q why bottom up parser called LR.
INVERSE POSTTREE.

kindly share your own papers of all subject

## CS606 FINAL TERM PAPER SHARED BY STUDENT

### ON AUGUST 25, 2016 AT 2:01PM

my today papr at 11:00 AM

Third section of YACC represents what kind of information?
How inherited attribute are different synthesized with respect to grammar attribute?
how context free parsing is different from context sensitive parsing?
For each instruction, show which variable are live variable are live imidiately after instruction execution
what are basic operation of shift reduce parser to parser a CFG ? explpain activities how they performe?
LL() table was give. show content of stack and input buffer for parse of string "ab"where s is start symbol?

objective was conceptual.. some objective from moaz file.


## CS606 FINAL TERM PAPER SHARED BY STUDENT

ON AUGUST 25, 2016 AT 3:52PM

Assalm o ALaikum

What does the compiler need to consider when applying optimization?

Define NFA?

In Main memory, what type of information is stored in data segement?

Identify whether the grammer is LR(1) and LL(1)?

S->Aa|Bb

A->c

B->c

Characteristics of Live variables?

Algorithm to generate LALR(1) DFA?

Which information we get from 3rd section of YACC File?

How can complier transformation improve program?

LL Parse table ?

INT and BOOl main sy bhi tha 5 marks ka ?


For each instruction, show which variable are live variable are live imidiately after instruction execution

(5marks)

1. A=7

2. B=A+2

3. C=A+B

4.D=C+B

5.B=C+B

## CS606 FINAL TERM PAPER SHARED BY STUDENT

AUGUST 27, 2016 AT 11:13AM

cs606
tree was given and preorder was asked?
what is non determininstic fa?
productions were given and canonical collection set was asked to built using productions.
action table and goto table were given we were asked to show in stack and input buffer
when we use garbage collection for memory management?
if on right hand side of production there are k symbols then how many positions are there for place holder?
production was given to determine whether this is of LR(1) or LL(1) ?
code was given and we have to find basic blocks?
use of address descriptor in code generation algorithm of 5 marks

## CS606 FINAL TERM PAPER SHARED BY STUDENT

on August 29, 2016 at 10:03pm

Assalamualaikum.

CS606 exam held today:

1. A tree was given, In-order traversal was required.
2. What are characteristics of Live Variables?
3. What does the compiler need to consider when applying optimization?


4. In main memory what type of information is stored in data segment?
5. How can compiler transformation improve program?
6. What is the use of Address descriptor in Code Generation algorithm?
7. A table with left column filled with terms, and right column filled with meanings of terms was given. It was required to match the term in the left column to its meaning on the right.
8. Bottom-Up parsing of "abbcbcde" was required. The grammar was as follows...
   S → aABe
   A → ABc | b
   B → d
9. Identify the error in the following code…

```
main()
{
int *p;
p = error();
}
int *error()
{
int I=23;
return & I;
}
```

10. Consider the following grammar productions. Suppose you have an attribute E.type which can be set to either INT or BOOL. Assume that the type of an expression is set to INT if an error is detected and you have a routine msg() similar to printf() that can be used to print error message.

```
E → CONST          {E.type=??}
    | ID           {E.type =getType(ID.name);}
    | E1+E2        {E.type=??}
    | E1<E2        {E.type=??}
    | E1==E2       {E.type=??}
    | (E1)         {E.type=??}
```

    Provide the parse tree for the expression (5<2) == (4+x).

11. Write syntax-directed definition to determine the type of each sub-expression by considering the following grammar. Assign an attribute “type”. The given grammar can generate expressions as when two operands are added, result of the expression will be int; otherwise, it will be float. If expression has no operator, resultant expression will have same type as constant on right side have.
    E → E + E | T
    T → num . num | num


## CS606 FINAL TERM PAPER SHARED BY STUDENT

MY TODAY'S CS-606 PAPER STARTED 27/02/2016 10:30 AM

Q: Give an example of preference translator? (2 Marks)
Q: sort out given tree into pre-ordered. (2 Marks)
Q: How Lex different from Flex? (2marks)
Q:For each instruction, show which variable are live variable are live imidiately after instruction execution (5marks)
1. A=7
2. B=A+2
3. C=A+B
4.D=C+B
5.B=C+B
Q: write algorithm LALR(1) parser (5 marks)
Q: find semantic rules from given expressions.(5 Marks)

## CS606 FINAL TERM PAPER SHARED BY STUDENT

ON FEBRUARY 29, 2016 AT 9:11PM

**My todays Paper of 4:30pm**

**Mostly mcq's was from saher objective file.**

**Q:** How can you construct goto table in LR(1) parser?(2)

**Q:** Give an example of function preventing transformation?(2)

**Q:** What is the purpose of using Live variable?(2)

**Q:** Identify whether the following grammer is LR(1) or LL(1)?(2)

S à Aca|Bcb

Aàc

Bàc

**Q:** Identify the error in the following code (2)


```
Main()
{
    Int *p;
    P=error();
  }
Int *error()
{
  Int I=23;
Return & I;
}
```

**Q:** What are the basic blocks for the following 3-addresses code segment? (3)

(Code was given)

**Q:** How context free parsing is different from context-Sensitive Switching? (3)

**Q:** How inherited attribute can be used Syntax-directed definition? (3)

**Q:** Consider the following ACTION/Goto table(5)

*Table was given and the statement was (Show the contents of the stack and input buffer for the shift-reduce parse of input “a” assuming state 0 is the start state)

**Q:** Develop an algorithm to generate LAL(1) DFA(5)

**Q:** Add semantic rules to the following grammar to compute the attribute rm, whose value is the rightmost terminal in the string we parsed. For example, if the string parsed were zxyxy, S.rm would be y.(5)


$S \rightarrow A$ {S.rm =

$A \rightarrow A_1\ x\ y$
$\quad | \ B\ A_1\ y$
$\quad | \ C$

$B \rightarrow B_1\ z$
$\quad | \ x$

$C \rightarrow w\ C_1$
$\quad | \ y\ C_1$
$\quad | \ z$

**Q:** Source language expression can be break down into simple parts using three address code. you are required to give any two reasons of doing so(5)

## CS606 FINAL TERM PAPER SHARED BY STUDENT

on August 28, 2014 at 8:58pm

AOA,

my today paper 8 am ,

jesy ye subject shakl se mushkil lgta hai wesy hai nhi , ap aram se read kro , aram se smjh aaey gi is ki !!

paper ki tiari k liye , ap ko past objective prhni chaey aur aubjective bhi dekh len jst idea k kis kisam k question aty hn,

subjective k liye 35 se 45 tk thek thek tiare kren , , aur 28, 29 ,30 men se sirf objective aai thi ,

ab 35 lectr men woh production den ge , aur us k semantic rule likhny hn ge!!

ab 38 men se flow of control ko yad kr len ,

syntex-directed translation k topic se 3 question aaey thy mery , tu 39 ,40 bht importatnt hai , concept hon achaey , values aur hn gi , question men !1


is se agay lectr me n meri tu objective aai thi , subjective bhi aa skta hai

basic block , code generation ,,DAG ,aur register allocation , lazmi ana chaey , subjective aur objective donu k important hn ye topic !!!

26 lectr se 2 marks LR1 table bnao ! yacc %% men objective thi , register aalocation se bhi thi ,

## CS606 FINAL TERM PAPER SHARED BY STUDENT

### ON 2013

Aslam-O-Alikum. MCQ's are 30% from past papers. Check attached file

40 MCQ's

4 Question of 2 Marks

4 Question of 3 Marks

4 Question of 5 Marks

Subjective Questions are:

**1)** S ->{SX} | a 2 Marks

X -> ε| + SY | Yb

Y -> ε | - SXc

Find Non- Terminals and Terminals

**2)** why use common sub-expression. 2 Marks

**3)** Which Information we can get the second section of YACC file. 2 Marks

**4)** In main memory, what type of information store in data segment. 2 Marks

**5)** One Question conceptual about get rid. Microsoft use parsing technique and it hava face problem. we will help about alternative solution. e.t.c 3 Marks

**6)** When compiler use stack for allocation at run time for storing variable. 3 Marks


**7)** Write Basic block 3-address code segment. 3 Marks

1) a = 1

2) b = 2

3) c = a + b

4) d = c - a

**8)** Difference between Attribute Grammer and Syntax directed translation. 3 Marks

**9)** Let CFG G= $\{V_n, V_t, S, P\}$ where Marks 5

$V_n$ = {<goal>, <expression>, <term>, <factor>}

$V_t$ = {a,b,c,-,+}

S = {goal}

Define the production of G and drive the string a-b+c

**10)** One Question about Lable and Goto Simply describe about uses of those 2 control flow statement. Marks 5

**11)** DAG representation of Basic Block Marks 5

t1 := a + b

t2 := c + d

t3 := e - t2

t4 := t1 - t3

**12)** Ye question kafi lengthy tha lekan ye parse tree k topic main sy he tha. or parse tree he bnana tha 5 Marks

Regard,,

And

Best of Luck. :-)


CS606 FINAL TERM PAPER SHARED BY STUDENT

22 AUGUST SPRING 2015

Total Questions = 52
Total Marks = 80
Total 1 Mark MCQ = 40
Total 2 Marks Short Questions = 4
Total 3 Marks Short Questions = 4
Total 5 Marks Long Questions = 4

***Complete paper***

Paper was very easy and short mostly from Past papers.

**MCQ 30 – 35 from Past papers**

**1)**

The regular expressions a*|b* and (a|b)* describe the _____set of strings.

Same

**Different**

Onto

**2) This MCQ was asked 2 times in the paper**

S --> a | B

B --> Bb | E The non-terminal _____ is left recursive.

**Answer: B**

**3)**

A lexical analyzer generator automatically constructs a _____ that recognizes tokens.

Select correct option:

**FA**

PDA

DP

None of the given


**4)**

The following two items A -> P • Q B -> P • Q can co-exist in an _____ item set.

Select correct option:

**LR**

LS

LT

PR

**5)**

Three-address codes are often implemented as a _____.

Select correct option:

**Set of quadruples Page no: 104**

**6)**

Attributes of a node, whose, values are defined wholly in terms of attributes of node's children and from constants are called _____.

**Synthesized attributes Page no: 92**

**7)**

The notation _____ instructs YACC to push a computed attribute value on the stack.

Select correct option:

**Answer: $$ Page no: 98**

**8)**

What does following statement represent? x[i] = y

**Answer: indexed assignment Page no: 107**

**9)**

**S --> A B**

**A --> e | aA**

**B --> e | bB - FIRST(S) contains ___ elements**


**Answer: 3 Page no: 46**

**First{S} = {e,a,b}**

**10)**

**Dotted items (T · a •b) record which part of a token has already been matched. Integer ? ([0-9])+ • this is a _____ item.**

**Answer: Reduced**

**11)**

**A _____ is a top down parser.**

**Answer: Predictive Parsing Page no: 46**

**12)**

Intermediate Representation (IR) stores the value of its operand in _____ .

Select correct option:

**Registers Page no: 10**

Memory

Hard disk

Secondary storage

**13)**

In compilation process Hierarchical analysis is also called

Select correct option:

Parsing

**Syntax analysis**

Both Parsing and Syntax analysis

None of given

**14)**

Consider the grammar A --> B C D

B --> h B | epsilon

C --> C g | g | C h | i

D --> A B | epsilon


Follow of C is _____ .

h

**g, h, i, $**

g, i

g

**15)**

In PASCAL _____ represent the inequality test.

:=

=

**<>**

None of the given

**16)**

In DFA minimization we construct one _____ for each group of states from the initial DFA.

**State Page no: 25**

NFA

PDA

None of given

**17)**

Intermediate Representation (IR) stores the value of its operand in

**Registers**

Memory

Hard disk

Secondary storage

**18)**

Yacc contains built-in support for handling ambiguous grammars resulting in shift-reduce conflicts. By default these conflicts are solved by performing the _____.

**Shift action**

Reduce action

Shift and reduce actions


De-allocation of memory

**19)**

When generating a lexical analyzer from a _____ description, the item sets (states) are constructed by two types of "moves": character moves and e moves.

Character
Grammar
**Token (Page 18)**
Sentence

**20)**

The notation _____ instructs YACC to push a computed attribute value on the stack.
**$$ (Page 98)**
&&
## --

**21)**

Performing common sub expression elimination on a dependency graph requires the identification of nodes with the same operator and operands. When using a hash table (with a hash function based on operator and operands) all_____ nodes can be identified in linear time.
**Common**
Uncommon
Next

Previous

**22)**

Linear IRs resembles pseudo-code for same _____.
Automated Machine
Mechanical machines
Token machines

**Abstract machine (Page 100)**


**23)**

A lexical analyzer generator automatically constructs a _____ that recognizes tokens.
**FA (Page 18)**
PDA
DP
None of the given

**24)**

The following two items A -> P • Q B -> P • Q can co-exist in an _____ item set.
**LR**
LS
LT
PR

**25)**

Simple code generation considers one AST node at a time. If the target is a **register machine,** the code can be generated in one _____ traversal of the AST, possibly introducing temporaries when running out of registers.
Select correct option:
**Depth-first**
Breadth-first
Top-Down
Bottom-Up

**26)**

Simple code generation considers one AST node at a time. If the target is a ***stack machine***, the code can be generated in one _____ traversal of the AST, possibly introducing temporaries when running out of registers.
Select correct option:


**Depth-first**
Breadth-first

Top-Down
Bottom-Up

**27)**

In compilers, linear analysis is also called _____

a. Lexical Analysis
b. Scanning
**c. Lexical Analysis and Scanning**
d. None of the given

**28)**

The parser generator YACC can handle _____ grammar.

**a. LL(1)**
b. LT(1)
c. LS(1)
d. LF(1)

**29)**

A linker combines multiple object files into a _____ executable object.

**a. Single**
b. Double
c. Triple

d. Quadruple

**30)**

Hybrid IRs combine elements of _____

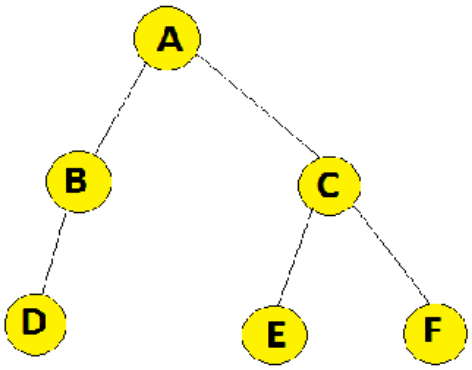
a. Graphical (Structural)
b. Linear IRs
**c. Both Graphical (Structural) and linear**
d. Non-Linear IRs

## Subjective Part

**A code statement was given have to identify LR (1) or LL (1) (2marks)**

**Qs Was given tell the example of ……. Transformation (2marks)**

**Traverse the given tree in postorder. (2marks)**




**Why compiler uses multiple instruction representation? 3 Marks**

**Which information we can get from the first section of YACC file? (3 Marks)**

**Differentiate attribute grammar and syntax-directed grammar. (3marks)**

**What is reducible flow graph? (3 marks)**

**Add semantic rules to the following grammar to compute the attribute rm, whose value is the rightmost**

**terminal in the string we parsed. For example, if the string parsed were zxyxy, S.rm would be y.**

**(5marks)**

$S \rightarrow A$ {S.rm =

$A \rightarrow A_1$ **x y**
| B $A_1$ **y**
| C

$B \rightarrow B_1$ **z**
| **x**

$C \rightarrow$ **w** $C_1$
| **y** $C_1$
| **z**

**A grammar was given we have to find First and Follow (5 marks)**

**An expression was given we have to draw syntax tree. (5marks)**

**Role of GOTO and Label (5 marks)**