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CSCI 400 A

2/28/2013

Homework #5

Problem 3

1. **First Sets:**

S 🡪 ASE | CC | BCS **{ b, f, g, i, j | d, e, g | a, c, k }**

A 🡪 bEC | Da | gB **{ b | f, i, j | g }**

B 🡪 aDE | cD | kAB **{ a | c | k }**

C 🡪 dEa | eS | gB **{ d | e | g }**

D 🡪 iB | jkC | fSk **{ i | j | f }**

E 🡪 CS | Aa | cb **{ d, e, g | b, f, g, i, j | c }**

All of the sets are pairwise disjoint.

1. **Parse Table:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | a | b | c | d | e | f | g | h | i | j | k |
| S | BCS | ASE | BCS | CC | CC | ASE | ASE | CC | ASE | ASE | BCS |
| A | - | bEC | - | - | - | Da | gB | - | Da | Da | - |
| B | aDE | - | cD | - | - | - | - | - | - | - | kAB |
| C | - | - | - | dEa | eS | - | - | hf | - | - | - |
| D | - | - | - | - | - | fSk | - | - | iB | jkC | - |
| E |  | Aa | cb | CS | CS | Aa | Aa | CS | Aa | Aa |  |

1. **Recursive Descent/Leftmost Derivation:**

S 🡪 ASE

🡪 DaSE

🡪 fSkaSE

🡪 fCCkaSE

🡪 fdEaCkaSE

🡪 fdAaaCkaSE

🡪 fdAaaCkaSE

🡪 fdgBaaCkaSE

🡪 fdgcDaaCkaSE

🡪 fdgcj kCaaCkaSE

🡪 fdgcj khfaa CkaSE

🡪 fdgcj khfaa dEakaSE

🡪 fdgcj khfaa dAaakaSE

🡪 fdgcj khfaa dbECaakaSE

🡪 fdgcj khfaa dbcbCaakaSE

🡪 fdgcj khfaa dbcbh faaka SE

🡪 fdgcj khfaa dbcbh faaka BCSE

🡪 fdgcj khfaa dbcbh faaka kABCSE

🡪 fdgcj khfaa dbcbh faaka kABCSE

🡪 fdgcj khfaa dbcbh faaka kbECBCSE

🡪 fdgcj khfaa dbcbh faaka kbCSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfBCSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa DECSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa iBECSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icDECSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkCECSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd EaECSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbaECSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb CSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfSCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfCCCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfeSCCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfeCCCCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedEaCCCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc baCCCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd EaCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbaCBCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf BCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cDCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkCCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdEaCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc baCSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc bahfSE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc bahfCCE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc bahfd EaCE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc bahfd cbaCE

🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc bahfd cbahf E

**🡪 fdgcj khfaa dbcbh faaka kbhfa icjkd cbacb hfedc bahfd cbahf cjkdc bahfd cbahf cb**

**Parse Tree:**

S

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

/ | \

A S E

/ | \

D a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_B C S \_\_\_\_\_\_\_\_\_\_\_\_\_\_ c b

/ \_\_\_\_ /\_\_\_\_ | \

/ / | \ | \

f S k k A B h f C C

| | \ / \

C C b E C c D d E a h f

/ \ | \ \ |

d E a d E a \_\_\_\_ C S h f j k C c b

| | / | \

A a A a h f \_\_B C S\_\_ d E a

/ / / | \ |

g B b E C a D E h f C C c b

\ | \ | \ / \

c D c b h f i B c b e S d E a

\ | \ |

j k C c D C C c b

\ | / \

h f j k C d E a h f

| |

d E a c b

|

c b