

CFG:-

Program \rightarrow stmt-list

stmt-list \rightarrow stmt-list stmt

stmt-list \rightarrow stmt

stmt \rightarrow declaration

stmt \rightarrow assignment

stmt \rightarrow if-stmt

stmt \rightarrow while-stmt

stmt \rightarrow for-stmt

stmt \rightarrow io-stmt

stmt \rightarrow break-stmt

stmt \rightarrow black

declaration \rightarrow Adad, ID, SEMI

declaration \rightarrow Ashariya, ID, SEMI

declaration \rightarrow Harf, ID SEMI

assignment \rightarrow ID Assign expr SEMI

if-stmt \rightarrow Jay Jay (condition) Stmt

if-stmt \rightarrow Jay Jay (condition) stmt Fair stmt

if-stmt \rightarrow Jay Jay (condition) stmt Nahito (condition) stmt

if-stmt \rightarrow Jay Jay (condition) stmt Nahito (condition) stmt

Fair stmt

While-stmt \rightarrow Jadtak (condition) stmt

For-stmt \rightarrow Harik (for-init SEMI condition SEMI for-update) stmt

for-init \rightarrow ID Assign expr

for-update \rightarrow ID assign expr

do-stmt \rightarrow Likho expr SEMI

do-stmt \rightarrow Lo ID SEMI

Break \rightarrow Roko SEMI

Block \rightarrow { stmt-list }

block \rightarrow { }

expr \rightarrow expr + term

expr \rightarrow expr - term

expr \rightarrow term

term \rightarrow term * factor

term \rightarrow term / factor

term \rightarrow factor

factor \rightarrow NUMBER

factor \rightarrow ID

factor \rightarrow (expr)

SEMI \rightarrow ;

condition \rightarrow expr < expr

condition \rightarrow expr > expr

condition \rightarrow expr == expr

condition \rightarrow Shoot / sach

First & Follow

1)

$\text{expr} \rightarrow \text{expr} + \text{term}$

$\text{expr} \rightarrow \text{expr} - \text{term}$

$\text{expr} \rightarrow \text{term}$

$\text{term} \rightarrow \text{factor}$

$\text{factor} \rightarrow \text{Number} | \text{ID} | (\text{expr})$

First

Follow

Number, ID, (

\$, +

Number, ID, (

\$, +, -

Number, ID, (

\$, +, -

Number, ID, (

\$, +, -

Number, ID, (

\$, +, -,)

2) ~~$\text{factor} \rightarrow \text{Number} | \text{ID} | (\text{expr})$~~

$\text{stmt} \rightarrow \text{assignment}$

$\text{assignment} \rightarrow \text{ID Assign Expr SEMI}$

First

ID

Follow

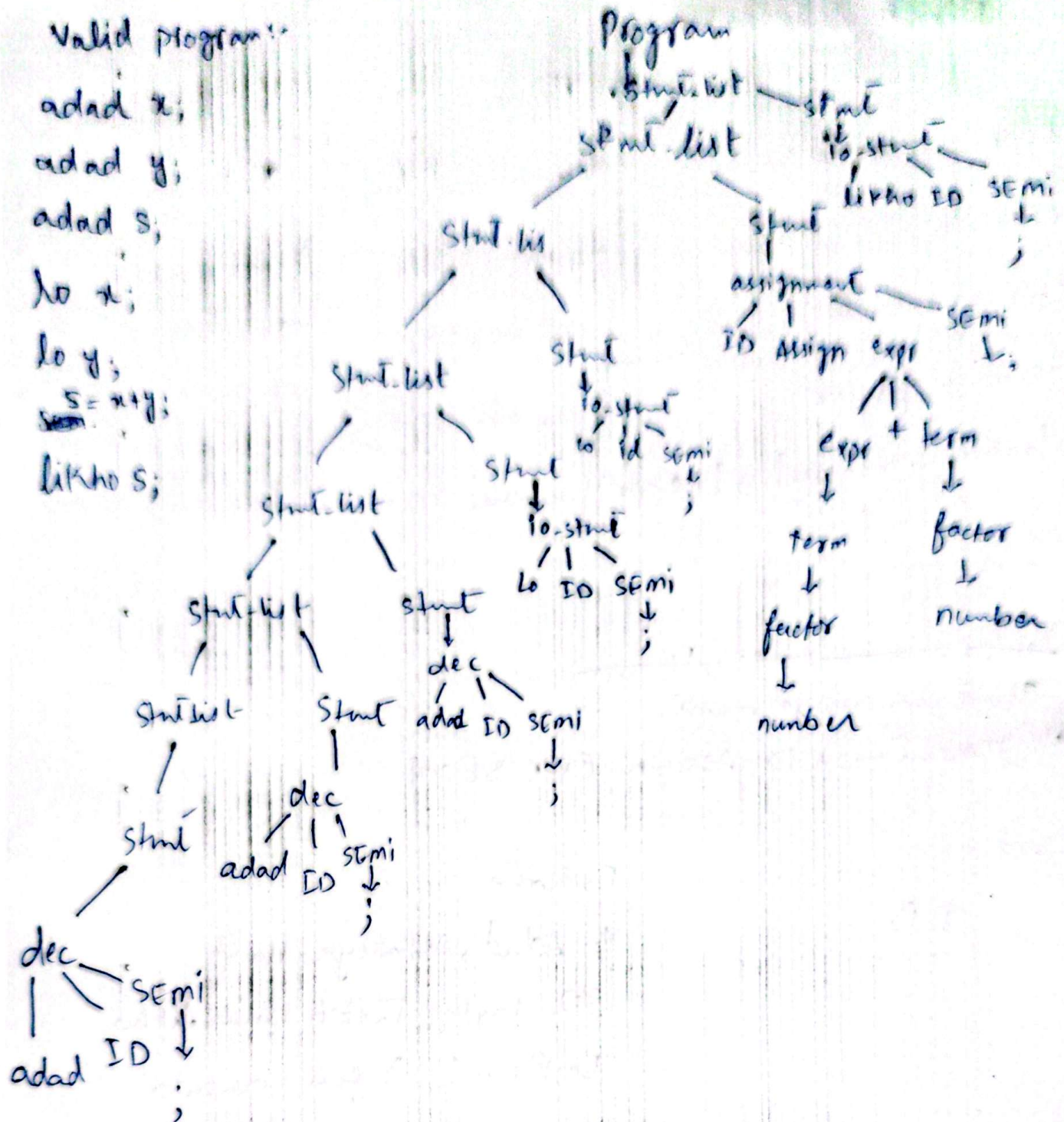
\$ Adad, Ashariya, Harf

ID, Taytay, Tadlak, Harik, litho

lo, Roko, (,), fein, Nahito

Valid program:-

adad x ;
 adad y ;
 adad s ;
 ho x ;
 ho y ;
~~sum~~ $s = x + y$;
 likho s ;



Valid Program + Parse tree.