

## Automatas Lab E

- **slr-1.yalp:**

State 0:

expression -> . expression PLUS term  
expression -> . term  
expression' -> . expression  
factor -> . ID  
factor -> . LPAREN expression RPAREN  
term -> . factor  
term -> . term TIMES factor

Transitions:

ID -> State 1  
LPAREN -> State 2  
expression -> State 3  
factor -> State 5  
term -> State 4

State 1:

factor -> ID .

State 2:

expression -> . expression PLUS term  
expression -> . term  
factor -> . ID  
factor -> . LPAREN expression RPAREN  
factor -> LPAREN . expression RPAREN  
term -> . factor  
term -> . term TIMES factor

Transitions:

ID -> State 1  
LPAREN -> State 2  
expression -> State 6  
factor -> State 5  
term -> State 4

State 3:

expression -> expression . PLUS term  
expression' -> expression .

Transitions:

PLUS -> State 7  
\$ -> accept :)

State 4:

expression -> term .  
term -> term . TIMES factor

Transitions:

TIMES -> State 8

State 5:

term -> factor .

State 6:

expression -> expression . PLUS term

factor -> LPAREN expression . RPAREN

Transitions:

PLUS -> State 7

RPAREN -> State 9

State 7:

expression -> expression PLUS . term

factor -> . ID

factor -> . LPAREN expression RPAREN

term -> . factor

term -> . term TIMES factor

Transitions:

ID -> State 1

LPAREN -> State 2

factor -> State 5

term -> State 10

State 8:

factor -> . ID

factor -> . LPAREN expression RPAREN

term -> term TIMES . factor

Transitions:

ID -> State 1

LPAREN -> State 2

factor -> State 11

State 9:

factor -> LPAREN expression RPAREN .

State 10:

expression -> expression PLUS term .

term -> term . TIMES factor

Transitions:

TIMES -> State 8

State 11:

term -> term TIMES factor .

- **slr-2.yalp:**

State 0:

expression -> . expression MINUS term  
expression -> . expression PLUS term  
expression -> . term  
expression' -> . expression  
factor -> . ID  
factor -> . LPAREN expression RPAREN  
factor -> . NUMBER  
term -> . factor  
term -> . term DIV factor  
term -> . term TIMES factor

Transitions:

ID -> State 1  
LPAREN -> State 3  
NUMBER -> State 2  
expression -> State 4  
factor -> State 6  
term -> State 5

State 1:

factor -> ID .

State 2:

factor -> NUMBER .

State 3:

expression -> . expression MINUS term  
expression -> . expression PLUS term  
expression -> . term  
factor -> . ID  
factor -> . LPAREN expression RPAREN  
factor -> LPAREN . expression RPAREN  
factor -> . NUMBER  
term -> . factor  
term -> . term DIV factor  
term -> . term TIMES factor

Transitions:

ID -> State 1  
LPAREN -> State 3  
NUMBER -> State 2  
expression -> State 7  
factor -> State 6  
term -> State 5

State 4:

expression -> expression . MINUS term  
expression -> expression . PLUS term  
expression' -> expression .

Transitions:

MINUS -> State 9

PLUS -> State 8

\$ -> accept :)

State 5:

expression -> term .

term -> term . DIV factor

term -> term . TIMES factor

Transitions:

DIV -> State 11

TIMES -> State 10

State 6:

term -> factor .

State 7:

expression -> expression . MINUS term

expression -> expression . PLUS term

factor -> LPAREN expression . RPAREN

Transitions:

MINUS -> State 9

PLUS -> State 8

RPAREN -> State 12

State 8:

expression -> expression PLUS . term

factor -> . ID

factor -> . LPAREN expression RPAREN

factor -> . NUMBER

term -> . factor

term -> . term DIV factor

term -> . term TIMES factor

Transitions:

ID -> State 1

LPAREN -> State 3

NUMBER -> State 2

factor -> State 6

term -> State 13

State 9:

expression -> expression MINUS . term

factor -> . ID

factor -> . LPAREN expression RPAREN

factor -> . NUMBER

term -> . factor

term -> . term DIV factor

term -> . term TIMES factor

Transitions:

ID -> State 1

LPAREN -> State 3

NUMBER -> State 2  
factor -> State 6  
term -> State 14

State 10:

factor -> . ID  
factor -> . LPAREN expression RPAREN  
factor -> . NUMBER  
term -> term TIMES . factor

Transitions:

ID -> State 1  
LPAREN -> State 3  
NUMBER -> State 2  
factor -> State 15

State 11:

factor -> . ID  
factor -> . LPAREN expression RPAREN  
factor -> . NUMBER  
term -> term DIV . factor

Transitions:

ID -> State 1  
LPAREN -> State 3  
NUMBER -> State 2  
factor -> State 16

State 12:

factor -> LPAREN expression RPAREN .

State 13:

expression -> expression PLUS term .  
term -> term . DIV factor  
term -> term . TIMES factor

Transitions:

DIV -> State 11  
TIMES -> State 10

State 14:

expression -> expression MINUS term .  
term -> term . DIV factor  
term -> term . TIMES factor

Transitions:

DIV -> State 11  
TIMES -> State 10

State 15:

term -> term TIMES factor .

State 16:

term -> term DIV factor .

- **slr-3.yalp:**

State 0:

expression -> . term  
expression -> . term PLUS expression  
expression' -> . expression  
term -> . LPAREN expression RPAREN  
term -> . NUMBER  
term -> . NUMBER TIMES term

Transitions:

LPAREN -> State 2  
NUMBER -> State 1  
expression -> State 3  
term -> State 4

State 1:

term -> NUMBER .  
term -> NUMBER . TIMES term

Transitions:

TIMES -> State 5

State 2:

expression -> . term  
expression -> . term PLUS expression  
term -> . LPAREN expression RPAREN  
term -> LPAREN . expression RPAREN  
term -> . NUMBER  
term -> . NUMBER TIMES term

Transitions:

LPAREN -> State 2  
NUMBER -> State 1  
expression -> State 6  
term -> State 4

State 3:

expression' -> expression .

\$ -> accept :)

State 4:

expression -> term .  
expression -> term . PLUS expression

Transitions:

PLUS -> State 7

State 5:

term -> . LPAREN expression RPAREN  
term -> . NUMBER  
term -> . NUMBER TIMES term  
term -> NUMBER TIMES . term

Transitions:

LPAREN -> State 2

NUMBER -> State 1

term -> State 8

State 6:

term -> LPAREN expression . RPAREN

Transitions:

RPAREN -> State 9

State 7:

expression -> . term

expression -> . term PLUS expression

expression -> term PLUS . expression

term -> . LPAREN expression RPAREN

term -> . NUMBER

term -> . NUMBER TIMES term

Transitions:

LPAREN -> State 2

NUMBER -> State 1

expression -> State 10

term -> State 4

State 8:

term -> NUMBER TIMES term .

State 9:

term -> LPAREN expression RPAREN .

State 10:

expression -> term PLUS expression .

- **slr-4.yalp:**

State 0:

a -> . ID ASSIGNOP e  
m -> . a  
p -> . t  
p' -> . p  
t -> . m  
t -> . m q

Transitions:

ID -> State 1  
a -> State 5  
m -> State 4  
p -> State 2  
t -> State 3

State 1:

a -> ID . ASSIGNOP e

Transitions:

ASSIGNOP -> State 6

State 2:

p' -> p .

\$ -> accept :)

State 3:

p -> t .

State 4:

q -> . SEMICOLON m  
q -> . SEMICOLON m q  
t -> m .  
t -> m . q

Transitions:

SEMICOLON -> State 7  
q -> State 8

State 5:

m -> a .

State 6:

a -> ID ASSIGNOP . e  
e -> . x  
e -> . x z  
f -> . ID  
f -> . LPAREN e RPAREN  
f -> . NUMBER  
r -> . f  
r -> . f v



x -> . r  
x -> . r w

Transitions:  
ID -> State 9  
LPAREN -> State 11  
NUMBER -> State 10  
e -> State 12  
f -> State 15  
r -> State 14  
x -> State 13

State 7:  
a -> . ID ASSIGNOP e  
m -> . a  
q -> SEMICOLON . m  
q -> SEMICOLON . m q

Transitions:  
ID -> State 1  
a -> State 5  
m -> State 16

State 8:  
t -> m q .

State 9:  
f -> ID .

State 10:  
f -> NUMBER .

State 11:  
e -> . x  
e -> . x z  
f -> . ID  
f -> . LPAREN e RPAREN  
f -> LPAREN . e RPAREN  
f -> . NUMBER  
r -> . f  
r -> . f v  
x -> . r  
x -> . r w

Transitions:  
ID -> State 9  
LPAREN -> State 11  
NUMBER -> State 10  
e -> State 17  
f -> State 15  
r -> State 14  
x -> State 13

State 12:

a -> ID ASSIGNOP e .

State 13:

e -> x .

e -> x . z

z -> . EQ x

z -> . LT x

Transitions:

EQ -> State 19

LT -> State 18

z -> State 20

State 14:

w -> . y

w -> . y w

x -> r .

x -> r . w

y -> . MINUS r

y -> . PLUS r

Transitions:

MINUS -> State 21

PLUS -> State 22

w -> State 23

y -> State 24

State 15:

j -> . DIV f

j -> . TIMES f

r -> f .

r -> f . v

v -> . j

v -> . j v

Transitions:

DIV -> State 25

TIMES -> State 26

j -> State 28

v -> State 27

State 16:

q -> . SEMICOLON m

q -> SEMICOLON m .

q -> . SEMICOLON m q

q -> SEMICOLON m . q

Transitions:

SEMICOLON -> State 7

q -> State 29

State 17:

f -> LPAREN e . RPAREN

Transitions:  
RPAREN -> State 30

State 18:  
f -> . ID  
f -> . LPAREN e RPAREN  
f -> . NUMBER  
r -> . f  
r -> . f v  
x -> . r  
x -> . r w  
z -> LT . x

Transitions:  
ID -> State 9  
LPAREN -> State 11  
NUMBER -> State 10  
f -> State 15  
r -> State 14  
x -> State 31

State 19:  
f -> . ID  
f -> . LPAREN e RPAREN  
f -> . NUMBER  
r -> . f  
r -> . f v  
x -> . r  
x -> . r w  
z -> EQ . x

Transitions:  
ID -> State 9  
LPAREN -> State 11  
NUMBER -> State 10  
f -> State 15  
r -> State 14  
x -> State 32

State 20:  
e -> x z .

State 21:  
f -> . ID  
f -> . LPAREN e RPAREN  
f -> . NUMBER  
r -> . f  
r -> . f v  
y -> MINUS . r

Transitions:  
ID -> State 9  
LPAREN -> State 11  
NUMBER -> State 10  
f -> State 15

r -> State 33

State 22:

f -> . ID

f -> . LPAREN e RPAREN

f -> . NUMBER

r -> . f

r -> . f v

y -> PLUS . r

Transitions:

ID -> State 9

LPAREN -> State 11

NUMBER -> State 10

f -> State 15

r -> State 34

State 23:

x -> r w .

State 24:

w -> . y

w -> y .

w -> . y w

w -> y . w

y -> . MINUS r

y -> . PLUS r

Transitions:

MINUS -> State 21

PLUS -> State 22

w -> State 35

y -> State 24

State 25:

f -> . ID

f -> . LPAREN e RPAREN

f -> . NUMBER

j -> DIV . f

Transitions:

ID -> State 9

LPAREN -> State 11

NUMBER -> State 10

f -> State 36

State 26:

f -> . ID

f -> . LPAREN e RPAREN

f -> . NUMBER

j -> TIMES . f

Transitions:

ID -> State 9

LPAREN -> State 11

NUMBER -> State 10  
f -> State 37

State 27:  
r -> f v .

State 28:  
j -> . DIV f  
j -> . TIMES f  
v -> . j  
v -> j .  
v -> . j v  
v -> j . v

Transitions:  
DIV -> State 25  
TIMES -> State 26  
j -> State 28  
v -> State 38

State 29:  
q -> SEMICOLON m q .

State 30:  
f -> LPAREN e RPAREN .

State 31:  
z -> LT x .

State 32:  
z -> EQ x .

State 33:  
y -> MINUS r .

State 34:  
y -> PLUS r .

State 35:  
w -> y w .

State 36:  
j -> DIV f .

State 37:  
j -> TIMES f .

State 38:

$v \rightarrow j \ v.$