Project Αρχές Γλωσσών

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Το BNF της εργασίας :

<ARXEIO> ::= "<ss:Workbook>" WorkbookPer "</ss:Workbook>";

<WorkbookPer> ::= <StylesMore2> <WorksheetMore> | <WorksheetMore> ;

<StylesMore2> ::= <StylesMain> | <StylesMore2> <StylesMain> ;

<StylesMain> ::= "<ss:Styles>" <StylesMore> "</ss:Styles>" ;

<StylesMore> ::= <StyleMain> | <StylesMore> <StyleMain> ;

<StyleMain> ::= "<ss:Style>" "ss:ID=" <STRING> "</ss:Style>" ;

<WorksheetMore> ::= <WorksheetMain> | <WorksheetMore> <WorksheetMain> ;

<WorksheetMain> ::= "<ss:Worksheet>" <WorksheetPer> ">" <TableForWork> "<ss:/Worksheet>";

<WorksheetPer> ::= "<ss:Name>=" <STRING> | "<ss:Name>=" <STRING> "<ss:Protected>=" BOOL ;

<TableForWork> ::= %empty | <TableMain> | <TableForWork> <TableMain> ;

<TableMain> ::= "<ss:Table>" <EpipleonTable> ">" <ColumnHelp> <RowHelp> "</ss:Table>" ;

<EpipleonTable> ::= "<ss:ExpandedColumnCount>=" <NUM> | "<ss:StyleID:>=" <STRING> | "<ss:ExpandedRowCount>=" <NUM> ;

<ColumnHelp> ::= %empty | <ColumnMain> | <ColumnHelp> <ColumnMain> ;

<RowHelp> ::= %empty | <RowMain> | <RowHelp> <RowMain> ;

<ColumnMain> ::= "<ss:Column>" <ColumnMore> "/>" ;

<ColumnMore> ::= "<ss:StyleID:>=" <STRING> | "<ss:StyleID:>=" <BOOL> | "<ss:StyleID:>=" <NUM> ;

<RowMain> ::= "<ss:Row>" <RowMore> ">" <CellMore> "</ss:Row>" ;

<RowMore> ::= %empty | "<ss:Height>=" <NUM> | "<ss:Height>=" <BOOL> | "<ss:Height>=" <STRING> ;

<CellMore> ::= %empty | <CellMain> | <CellMore> <CellMain> ;

<CellMain> ::= "<ss:Cell>" ">" <DataMore> "</ss:Cell>"| "<ss:Cell>" <DataMore> <CellPer> "</ss:Cell>"

<DataMore> ::= %empty | <DataMain> | <DataMore> <DataMain> ;

<DataMain> ::= "<ss:Data>" "<ss:Type>=" <TypeforData> ">" <DataMore> "</ss:Data>";

<TypeforData> ::= "NUMBER" | "STRINGDATA" | "BOOLEAN" | "DATETIME" ;

<DataMore> ::= "string data" | NUM | "datetime data" | "boolean data" ;

<CellPer> ::= "<ss:Mergeacross>=" <NUM> "<ss:Mergedown>=" <NUM> "<ss:StyleID>=" <STRING>;

<BOOL> ::= "TRUE" | "FALSE" ;

<NUM> ::= \"[0-9][0-9]*\" ;

STRING ::= \"[^'\n]*\" ;

Ο κώδικας του Flex:

```
%{

#include "ergpars.tab.h"

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

int LineNumber;
```

```
%}

whitespace [ \t]

newline [\n]

%%

"<ss:Workbook>"     {printf("%s", yytext); return WORKBOOK;}

"</ss:Workbook>"    {printf("%s", yytext); return CLOSING_WORKBOOK;}


"<ss:Styles"        {printf("\t" "%s", yytext); return STYLES;}

"</ss:Styles>"      {printf("\t" "%s", yytext); return CLOSING_STYLES;}


"<ss:Style"         {printf("\t" "\t" "%s", yytext); return STYLE;}

"</ss:Style>"       {printf("%s", yytext); return CLOSING_STYLE;}


"<ss:Worksheet"     {printf("\t" "%s", yytext); return WORKSHEET;}

"</ss:Worksheet>"   {printf("\t" "%s", yytext); return CLOSING_WORKSHEET;}


"<ss:Table"         {printf("\t" "\t" "%s", yytext); return TABLE;}

"</ss:Table>"       {printf("\t" "\t" "%s", yytext); return CLOSING_TABLE;}


"<ss:Column"        {printf("\t" "\t" "\t" "%s", yytext); return COLUMN;}

"/>"                {printf("%s", yytext); return CLOSING_COLUMN;}


"<ss:Row"           {printf("\t" "\t" "\t" "%s", yytext); return ROW;}

"</ss:Row>"         {printf("\t" "\t" "\t" "%s", yytext); return CLOSING_ROW;}
```

```
"<ss:Cell"        {printf("\t" "\t" "\t" "\t" "%s", yytext); return CELL;}

"</ss:Cell>"      {printf("\t" "\t" "\t" "\t" "%s", yytext); return CLOSING_CELL;}


"<ss:Data"        {printf("\t" "\t" "\t" "\t" "\t" "%s", yytext); return DATA;}

"</ss:Data>"       {printf("%s", yytext); return CLOSING_DATA;}


"ss:ID"            {printf("%s", yytext); return ID;}

"ss:ExpandedColumnCount"    {printf("%s", yytext); return EXPANDEDCOLUMNCOUNT;}

"ss:ExpandedRowCount"       {printf("%s", yytext); return EXPANDEDROWCOUNT;}

"ss:Protected"          {printf("%s", yytext); return PROTECTED;}

"ss:Name"          {printf("%s", yytext); return NAME;}

"ss:StyleID"           {printf("%s", yytext); return STYLEID;}

"ss:Height"           {printf("%s", yytext); return HEIGHT;}

"ss:MergeAcross"       {printf("%s", yytext); return MERGEACROSS;}

"ss:MergeDown"          {printf("%s", yytext); return MERGEDOWN;}

"ss:Type"          {printf("%s", yytext); return TYPE;}

"ss:Width"           {printf("%s", yytext); return WIDTH;}

"ss:Hidden"           {printf("%s", yytext); return HIDDEN;}


"\"Number\""        {printf("%s", yytext); return NUMBER;}

"\"DateTime\""        {printf("%s", yytext); return DATETIME;}

"\"Boolean\""        {printf("%s", yytext); return BOOLEAN;}

"\"String\""        {printf("%s", yytext); return STRINGDATA;}

">"            {printf("%s", yytext); return CLOSE;}

"/"            {printf("%s", yytext); return '/';}
```

```
"="         {printf("%s", yytext); return EQUAL;}

"<"         {printf("%s", yytext); return '<';}

\"[0-9][0-9]*\"    {printf("%s", yytext); return NUM;}

\"[^'\n]*\"       {printf("%s", yytext); return STRING;}


{whitespace}      {printf(" "); }

{newline}     {printf("\n"); LineNumber++; }

"<!--"[^-\n]*'-'+[^-\n]*\n"-->"      {printf("%s",yytext); }
%%
```

Ο κώδικας του Bison :

```
%{
#include <stdio.h>

#include <string.h>

#include <stdlib.h>

void yyerror(char *s);

extern char* yytext;

int LineNumber=1;

int NofErrors;

extern FILE *yyin;

int yylex();
%}
%token WORKBOOK

%token CLOSING_WORKBOOK
```

```
%token STYLES

%token CLOSING_STYLES

%token STYLE

%token CLOSING_STYLE

%token WORKSHEET

%token CLOSING_WORKSHEET

%token TABLE

%token CLOSING_TABLE

%token COLUMN

%token ROW

%token CLOSING_ROW

%token CELL

%token CLOSING_CELL

%token DATA

%token CLOSING_DATA

%token ID

%token EXPANDEDCOLUMNCOUNT

%token EXPANDEDROWCOUNT

%token HIDDEN

%token PROTECTED

%token NAME

%token WIDTH

%token STYLEID

%token HEIGHT

%token MERGEACROSS
```

```
%token MERGEDOWN

%token TYPE

%token NUMBER

%token DATETIME

%token BOOLEAN

%token STRING

%token CLOSED

%token SLASH

%token NUM

%token CLOSING_COLUMN

%token CLOSE

%token EQUAL

%token STRINGDATA

%%

ARXEIO : WORKBOOK WorkbookPer CLOSING_WORKBOOK ;

WorkbookPer : StylesMore2 WorksheetMore | WorksheetMore ;

StylesMore2 : StylesMain | StylesMore2 StylesMain ;

StylesMain : STYLES CLOSE StylesMore CLOSING_STYLES ;

StylesMore : StyleMain | StylesMore StyleMain ;

StyleMain : STYLE ID EQUAL STRING CLOSE CLOSING_STYLE ;

WorksheetMore : WorksheetMain | WorksheetMore WorksheetMain ;

WorksheetMain : WORKSHEET WorksheetPer CLOSE TableForWork CLOSING_WORKSHEET ;

WorksheetPer : NAME EQUAL STRING | NAME EQUAL STRING PROTECTED EQUAL BOOL ;

TableForWork : %empty | TableMain | TableForWork TableMain ;

TableMain : TABLE EpipleonTable CLOSE ColumnHelp RowHelp CLOSING_TABLE ;
```

EpipleonTable : EXPANDEDROWCOUNT EQUAL NUM | STYLEID EQUAL STRING | EXPANDEDCOLUMNCOUNT EQUAL NUM ;

ColumnHelp : %empty | ColumnMain | ColumnHelp ColumnMain;

RowHelp: %empty | RowMain | RowHelp RowMain ;

ColumnMain : COLUMN ColumnMore CLOSING_COLUMN ;

ColumnMore : STYLEID EQUAL STRING | HIDDEN EQUAL BOOL | WIDTH EQUAL NUM ;

RowMain : ROW RowMore CLOSE CellMore CLOSING_ROW ;

RowMore : %empty | HEIGHT EQUAL NUM | HIDDEN EQUAL BOOL | STYLEID EQUAL STRING ;

CellMore : %empty | CellMain | CellMore CellMain ;

CellMain : CELL CLOSE DataMore CLOSING_CELL | CELL DataMore CellPer CLOSING_CELL;

DataMore : %empty | DataMain | DataMore DataMain ;

DataMain : DATA TYPE EQUAL TypeforData CLOSE DataMore CLOSING_DATA ;

TypeforData: NUMBER | STRINGDATA | BOOLEAN | DATETIME ;

DataMore : "string data" | NUM | "datetime data" | "boolean data" ;

CellPer : MERGEACROSS EQUAL NUM MERGEDOWN EQUAL NUM STYLEID EQUAL STRING;

BOOL : "TRUE" | "FALSE"

%%

```c
void yyerror(char *s) {

    printf("Errors In Line %d \n",LineNumber);

    NofErrors++;

}

int main(int argc, char* argv[]) {

    FILE *file;

    if ( file = fopen(argv[1], "r" ))

    {
```

```
yyin = file;

yyparse();

if (NofErrors==0) printf("Correct!\n");

    return 0;

}else{

    printf("File Not Here\n"); }
```

Το screenshot των αποτελεσμάτων :


```
del@del-VirtualBox:~$ ./ergpars test2.txt
<ss:Workbook>
        <ss:Styles>
                <ss:Style ss:ID="s526hfd512"></ss:Style>
                <ss:Style ss:ID="4gdxfg3g"></ss:Style>
                <ss:Style ss:ID="s523g6fdg34ghfd34gdgfg512"></ss:Style>
        </ss:Styles>
        <ss:Worksheet ss:Name="s23h5e623et10">
                <ss:Table ss:ExpandedColumnCount="2236345">
                        <ss:Column ss:StyleID="s12236234"/>
                        <ss:Column ss:StyleID="s52362"/>
                        <ss:Row>
                                <ss:Cell>
                                        <ss:Data ss:Type="Number">53632</ss:Data>
                                </ss:Cell>
                                <ss:Cell>
                                        <ss:Data ss:Type="String">sfgag4534gdf</ss:Data>
                                </ss:Cell>
                        </ss:Row>
                </ss:Table>
        </ss:Worksheet>

</ss:Workbook>
Correct!
```

Υπάρχει μόνο το screenshot από την πρώτη άσκηση (1) διότι δεν μπορούσαμε να βρούμε
κάποιο τρόπο υλοποίησης των ερωτημάτων 2 και 3 . Στο gcc εμφανίζονται μηνύματα
Warning 7 shift/reduce conflicts, χωρίς "λογικά" να επηρεάζει την ομαλή λειουργία του
προγράμματος. Επίσης, μετά το </ss:Worksheet> εμφανίζονται 2 γραμμές. Προσπαθήσαμε
να το κάνουμε troubleshooting ,ωστόσο δεν βρήκαμε κάποια λύση.