CSB 353: Compiler Design

LAB 8

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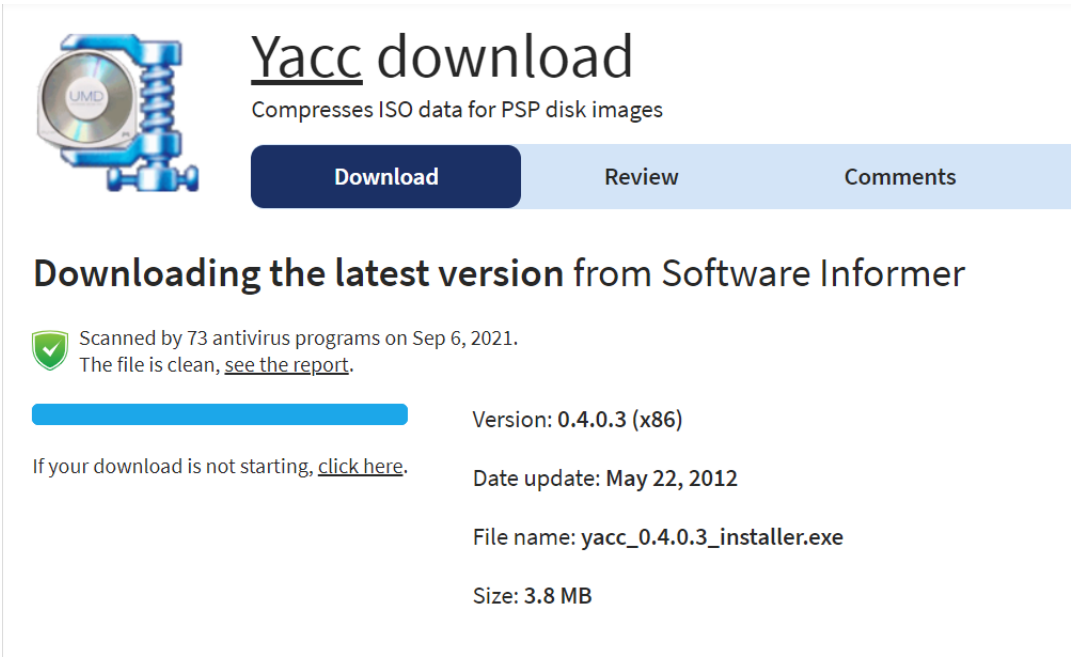
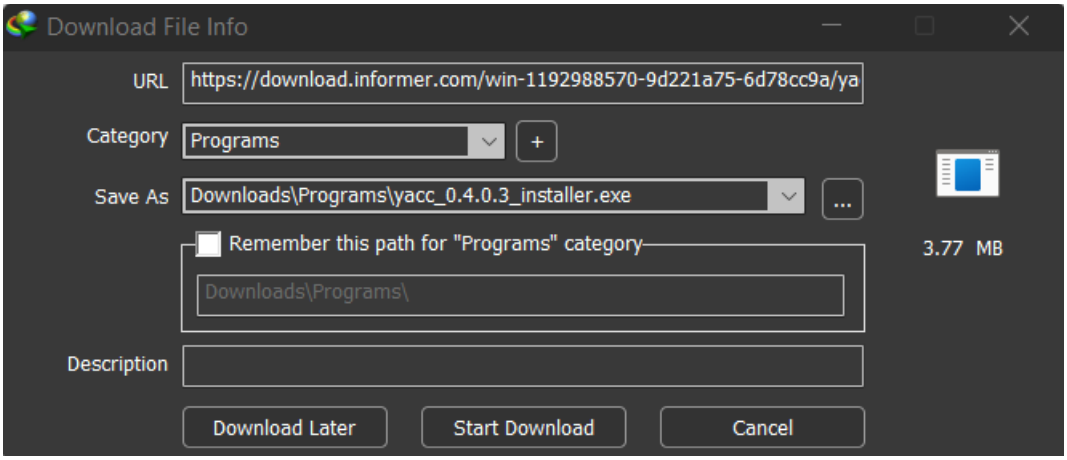
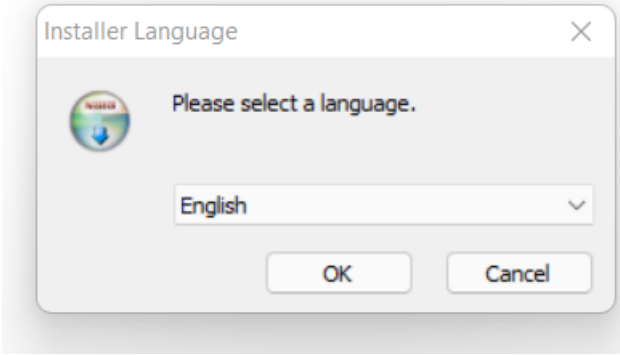
Ques 1. Download and Install Yacc Tool on your system and prepare a lab manual.

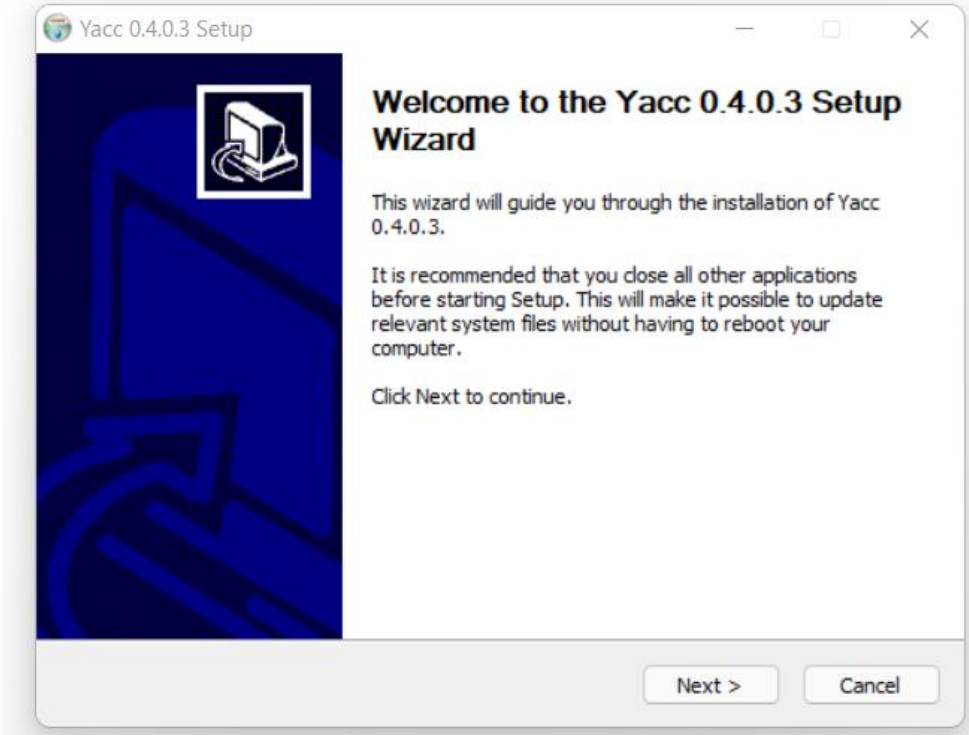
1. Download Yacc Tool from https://yacc.software.informer.com/download/.

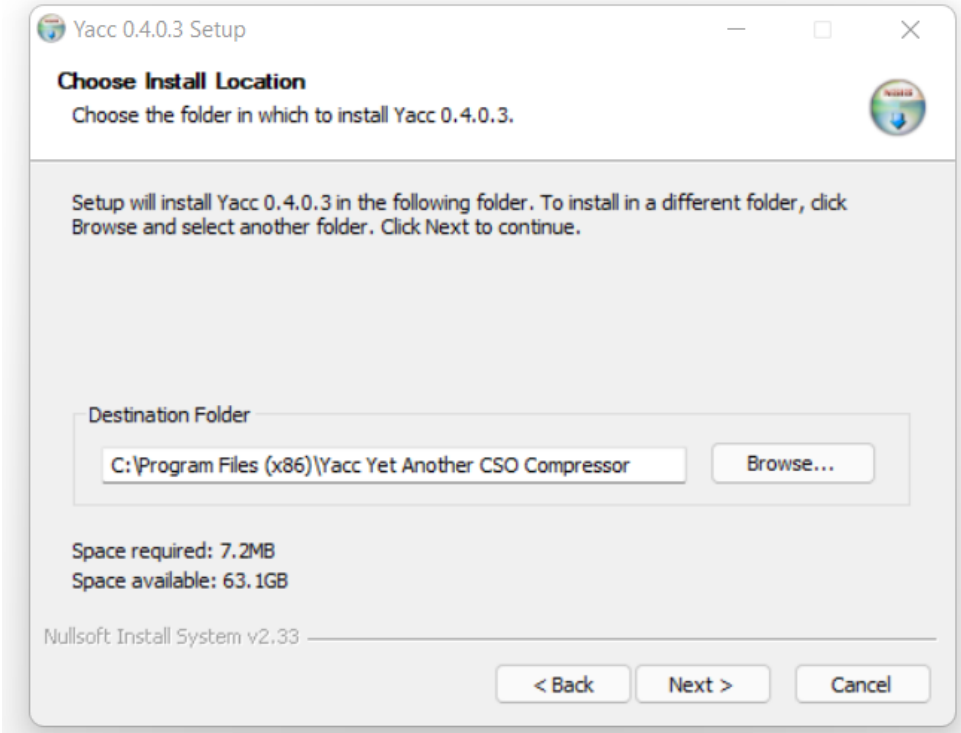


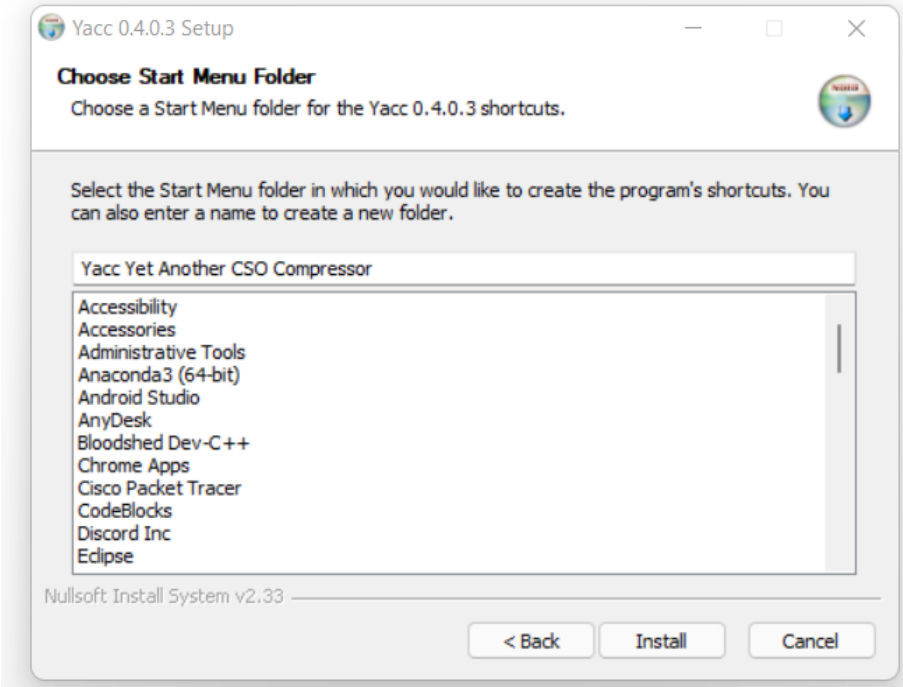


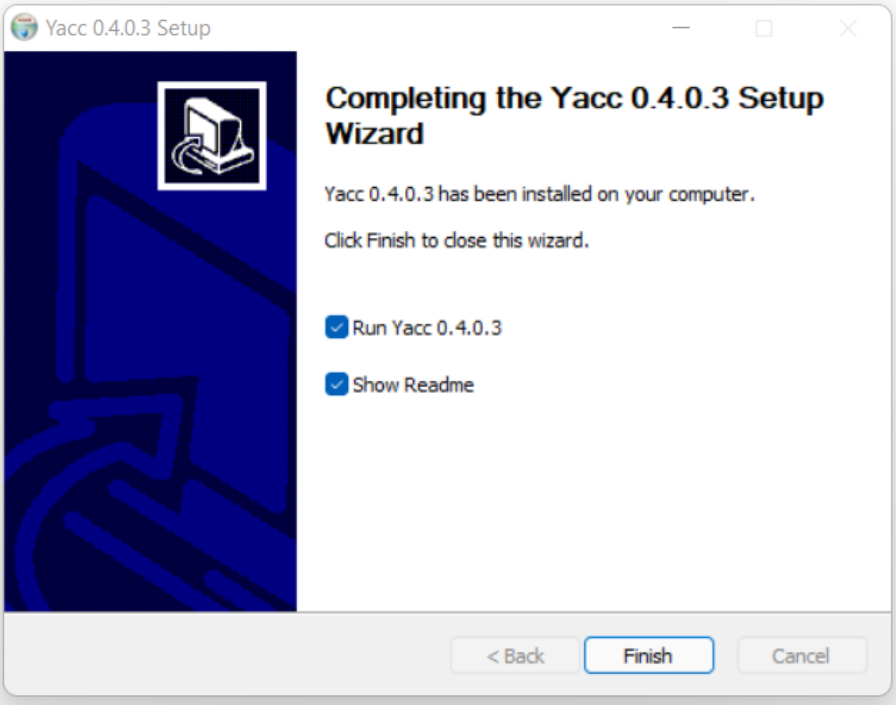
2. Run the exe file and install Yacc tool



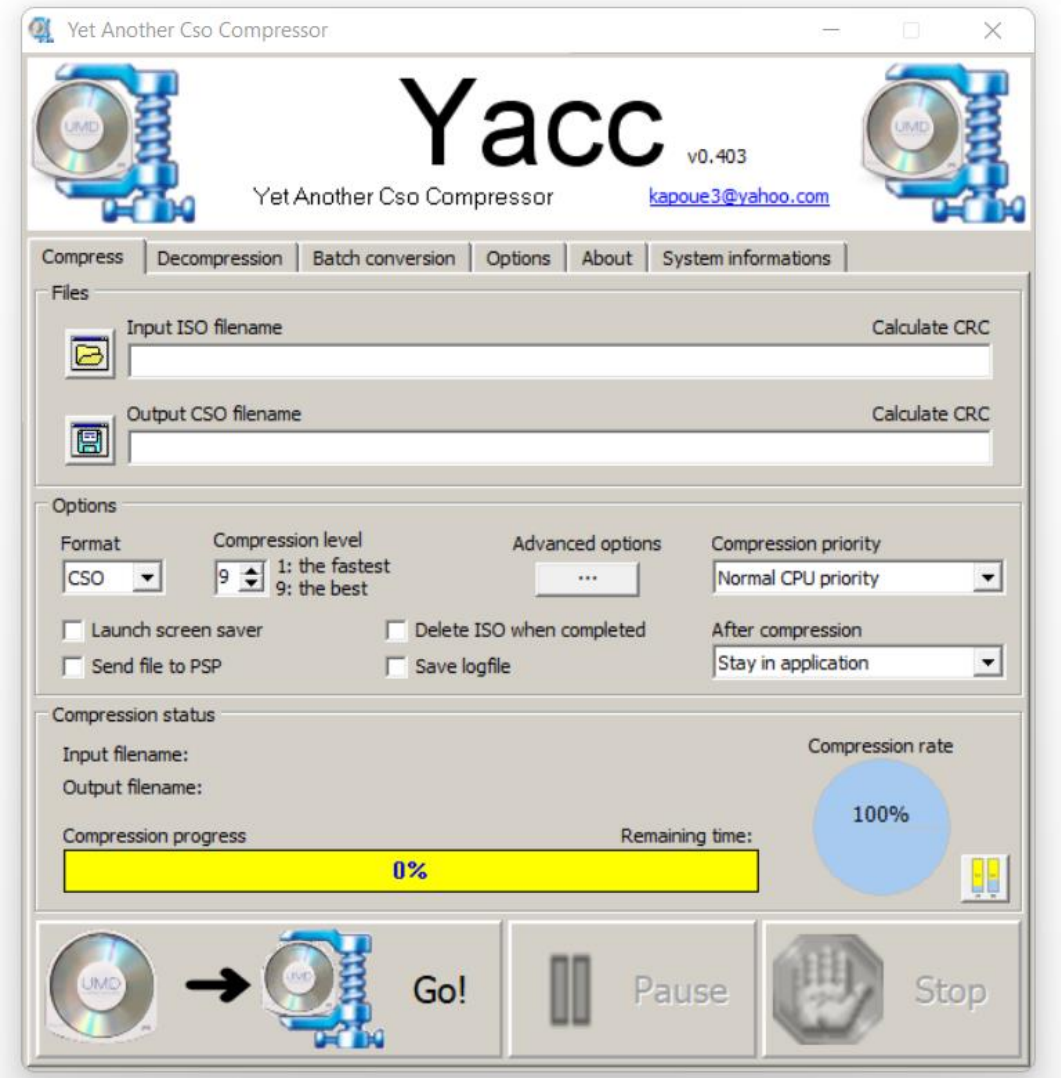

Yacc 0.4.0.3 Setup
Welcome to the Yacc 0.4.0.3 Setup Wizard
This wizard will guide you through the installation of Yacc 0.4.0.3.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel


Yacc 0.4.0.3 Setup
Choose Install Location
Choose the folder in which to install Yacc 0.4.0.3.
Setup will install Yacc 0.4.0.3 in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.
Destination Folder
C:\Program Files (x86)\Yacc Yet Another CSO Compressor
Browse...
Space required: 7.2MB
Space available: 63.1GB
Nullsoft Install System v2.33
< Back
Next >
Cancel


Yacc 0.4.0.3 Setup
Choose Start Menu Folder
Choose a Start Menu folder for the Yacc 0.4.0.3 shortcuts.
Select the Start Menu folder in which you would like to create the program's shortcuts. You can also enter a name to create a new folder.
Yacc Yet Another CSO Compressor
Accessibility
Accessories
Administrative Tools
Anaconda3 (64-bit)
Android Studio
AnyDesk
Bloodshed Dev-C++
Chrome Apps
Cisco Packet Tracer
CodeBlocks
Discord Inc
Eclipse
Nullsoft Install System v2.33
< Back
Install
Cancel


Yacc 0.4.0.3 Setup
Completing the Yacc 0.4.0.3 Setup Wizard
Yacc 0.4.0.3 has been installed on your computer.
Click Finish to close this wizard.
Run Yacc 0.4.0.3
Show Readme
< Back
Finish
Cancel

3. Run the Yacc tool



Ques 2. Write a Yacc program to check if entered statement is a valid arithmetic expression.

Code:

- validExpression.l

validExpression.l

```
%{
#include "y.tab.h"
extern yylval;
%}



%%
[0-9]+ {yylval=atoi(yytext); return NUMBER;}
[a-zA-Z]+ {return ID;}
[\t]+ ;
\n {return 0;}
. {return yytext[0];}
%%

int yywrap()
{
return(1);
}
```

- validExpression.y

validExpression.y

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

%token NUMBER ID
%left '+' '-'
%left '*' '/'
%%

expr: expr '+' expr
     |expr '-' expr
     |expr '*' expr
     |expr '/' expr
     |'-'NUMBER
     |'-'ID
     |'('expr')'
     |NUMBER
     |ID
     ;
%%

main()
{
printf("Enter the expression\n");
yyparse();
printf("\nExpression is valid\n");
exit(0);
}

int yyerror(char *s)
{
printf("\nExpression is invalid");
exit(0);
}
```

Output:

```
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8> flex validExpression.l
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8> bison -dy validExpression.y
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8> gcc lex.yy.c y.tab.c
validExpression.l:3:8: warning: type defaults to 'int' in declaration of 'yylval' [-Wimplicit-int]
    3 | extern yylval;
      |        ^~~~~~
y.tab.c: In function 'yyparse':
y.tab.c:596:16: warning: implicit declaration of function 'yylex' [-Wimplicit-function-declaration]
  596 | # define YYLEX yylex ()
      |                ^~~~~
y.tab.c:1241:16: note: in expansion of macro 'YYLEX'
 1241 |       yychar = YYLEX;
      |                ^~~~~
y.tab.c:1355:7: warning: implicit declaration of function 'yyerror'; did you mean 'yyerrok'? [-Wimplicit-function-declaration]
 1355 |       yyerror (YY_("syntax error"));
      |       ^~~~~~~
      |       yyerrok
validExpression.y: At top level:
validExpression.y:23:1: warning: return type defaults to 'int' [-Wimplicit-int]
   23 | main()
      | ^~~~
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8>
```

```
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8> .\a.exe
Enter the expression
a+(b*c)/e

Expression is valid
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8> .\a.exe
Enter the expression
a+(b-d

Expression is invalid
PS C:\Users\Prem\Desktop\6thSem\CSB353\lab8>
```