

UNIVERSIDAD DEL VALLE DE GUATEMALA

Construcción de Compiladores - CC3032

Sección 10

Ing. Bidkar Alexander Pojoy Corzo



Excelencia que trasciende

DEL VALLE
GRUPO EDUCATIVO

Laboratorio No. 1

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GUATEMALA, 07 de julio del 2024

Capturas Laboratorio 1

The screenshot shows the VS Code interface with the Explorer sidebar on the left displaying the file structure of 'LAB-1'. The main editor area shows the 'README.md' file with the following content:

```
1 # Laboratorio 1
2
```

The TERMINAL panel at the bottom shows the output of the Docker build process:

```
[+] Building 78.3s (10/10) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 253B
=> [internal] load metadata for docker.io/library/ubuntu:latest
=> [auth] library/ubuntu:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/4] FROM docker.io/library/ubuntu:latest@sha256:2e863c44b718727c860746568e1d54afd13b2fa71b160f5cd9058fc436217b30
=> => resolve docker.io/library/ubuntu:latest@sha256:2e863c44b718727c860746568e1d54afd13b2fa71b160f5cd9058fc436217b30
=> => sha256:2e863c44b718727c860746568e1d54afd13b2fa71b160f5cd9058fc436217b30 1.13kB / 1.13kB
=> => sha256:c920ba4cfca05503764b785c16b76d43c83a6df8d1ab107e7e6610000d94315c 424B / 424B
=> => sha256:35a8880259dd2077e584394471dda1a2c5bfd16893b829ea57619301eb3908 2.30kB / 2.30kB
=> => sha256:9c704cd0c694c4b0d85e589ac8d1fc3fd8f890b7f3731769a5b109eb495809 29.71MB / 29.71MB
=> => extracting sha256:9c704cd0c694c4b0d85e589ac8d1fc3fd8f890b7f3731769a5b109eb495809
=> [internal] load build context
=> => transferring context: 1.90kB
=> [2/4] RUN apt-get update -y && apt-get install -y --no-install-recommends build-essential bison flex && rm -rf /var/lib/apt/lists/*
=> [3/4] COPY files /home/files
=> [4/4] WORKDIR /home
=> => exporting to image
=> => writing image sha256:16724f07430cbfd895cfa390b3479a9280ed123ec15405e96168da618f8e4cc
=> => naming to docker.io/library/lab1-image
```

View build details: [docker-desktop://dashboard/build/desktop-linux/desktop-linux/vsn0e3kcc53jtk4vdd4i5fb](#)

What's next:
View a summary of image vulnerabilities and recommendations → [docker scout quickview](#)

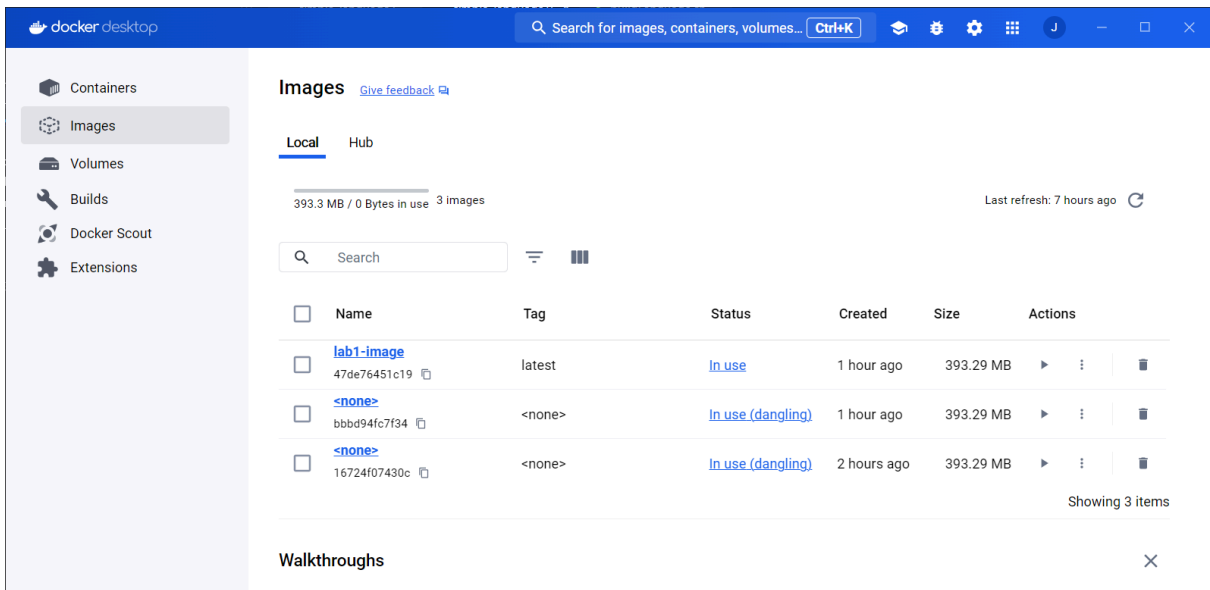
root@f49080cbdd2b:/home#

The screenshot shows the VS Code interface with the Explorer sidebar on the left displaying the file structure of 'LAB-1'. The main editor area shows the 'buildLanguage.sh' script with the following content:

```
1 #!/bin/bash
2 flex ./files/simple_language.1
3 yacc -dtv ./files/simple_language.y
4 g++ -c lex.yy.c
5 g++ -c y.tab.c
6 g++ -o calc y.tab.o lex.yy.o
```

The TERMINAL panel at the bottom shows the output of the script execution:

```
root@f49080cbdd2b:/home# flex ./files/simple_language.1
root@f49080cbdd2b:/home# yacc -dtv ./files/simple_language.y
root@f49080cbdd2b:/home# g++ -c lex.yy.c
root@f49080cbdd2b:/home# g++ -c y.tab.c
root@f49080cbdd2b:/home# g++ -o calc y.tab.o lex.yy.o
root@f49080cbdd2b:/home# ./calc
2 + 2:
4
```



1. Cree un programa que asigne un valor a una variable.

```
Microsoft Windows [Versión 10.0.19045.4529]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\Pablo Orellana\Documents\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1>docker run --rm -ti -v "C:\Users\Pablo Orellana\Documents\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1":/home lab1-image
root@607f34db1fb8:/home# #!/bin/bash
root@607f34db1fb8:/home# flex ./files/simple_language.l
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@607f34db1fb8:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-Wconflicts-sr]
./files/simple_language.y: note: rerun with option '-Wcounterexamples' to generate conflict counterexamples
root@607f34db1fb8:/home# g++ -c lex.yy.c
root@607f34db1fb8:/home# g++ -c y.tab.c
root@607f34db1fb8:/home# g++ -o calc y.tab.o lex.yy.o
root@607f34db1fb8:/home# ./calc
Ingrese expresiones o asignaciones:
x = 1 * 2 + 1
y = 3 * x
Asignación: x = 3
Asignación: y = 9
```

```
root@f94c208b2f09:/home# #!/bin/bash
root@f94c208b2f09:/home# flex ./files/simple_language.l
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@f94c208b2f09:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-Wconflicts-sr]
./files/simple_language.y: note: rerun with option '-Wcounterexamples' to generate conflict counterexamples
root@f94c208b2f09:/home# g++ -c lex.yy.c
root@f94c208b2f09:/home# g++ -c y.tab.c
root@f94c208b2f09:/home# g++ -o calc y.tab.o lex.yy.o
root@f94c208b2f09:/home# ./calc
Ingrese expresiones o asignaciones:
x = 7
Asignación: x = 7
y = x + 3
Asignación: y = 10
```

2. Cree un programa que realice una operación aritmética simple.

```
Microsoft Windows [Versión 10.0.19045.4529]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\Pablo Orellana\Documents\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1>docker run --rm -ti -v "C:\Users\Pablo Orellana\Documents\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1":/home lab1-image
root@f94c208b2f09:/home# #!/bin/bash
root@f94c208b2f09:/home# flex ./files/simple_language.l
root@f94c208b2f09:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-Wconflicts-sr]
./files/simple_language.y: note: rerun with option '-Wcounterexamples' to generate conflict counterexamples
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@f94c208b2f09:/home# g++ -c lex.yy.c
root@f94c208b2f09:/home# g++ -c y.tab.c
root@f94c208b2f09:/home# g++ -o calc y.tab.o lex.yy.o
root@f94c208b2f09:/home# ./calc
Ingrese expresiones o asignaciones:
452 * 120
Resultado: 54240
```

```
root@f94c208b2f09:/home# #!/bin/bash
root@f94c208b2f09:/home# flex ./files/simple_language.l
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@f94c208b2f09:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-Wconflicts-sr]
./files/simple_language.y: note: rerun with option '-Wcounterexamples' to generate conflict counterexamples
root@f94c208b2f09:/home# g++ -c lex.yy.c
root@f94c208b2f09:/home# g++ -c y.tab.c
root@f94c208b2f09:/home# g++ -o calc y.tab.o lex.yy.o
root@f94c208b2f09:/home# ./calc
Ingrese expresiones o asignaciones:
5 + 986
Resultado: 991
```

3. Experimente con expresiones más complejas y verifique que el compilador las procese correctamente.

```
Microsoft Windows [Versión 10.0.19045.4529]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\Pablo Orellana\Documents\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1>docker run --rm -ti -v "C:\Users\Pablo Orellana\Documents\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1":/home lab1-image
root@de2f23095e7f:/home# #!/bin/bash
root@de2f23095e7f:/home# flex ./files/simple_language.l
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@de2f23095e7f:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-wconflicts-sr]
./files/simple_language.y: note: rerun with option '-wcounterexamples' to generate conflict counterexamples
root@de2f23095e7f:/home# g++ -c lex.yy.c
root@de2f23095e7f:/home# g++ -c y.tab.c
root@de2f23095e7f:/home# g++ -o calc y.tab.o lex.yy.o
root@de2f23095e7f:/home# ./calc
Ingrese expresiones o asignaciones:
(2 + 3) * (5 - 1)
Resultado: 20
```

```
root@de2f23095e7f:/home# #!/bin/bash
root@de2f23095e7f:/home# flex ./files/simple_language.l
root@de2f23095e7f:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-wconflicts-sr]
./files/simple_language.y: note: rerun with option '-wcounterexamples' to generate conflict counterexamples
root@de2f23095e7f:/home# g++ -c lex.yy.c
root@de2f23095e7f:/home# g++ -c y.tab.c
root@de2f23095e7f:/home# g++ -o calc y.tab.o lex.yy.o
root@de2f23095e7f:/home# ./calc
Ingrese expresiones o asignaciones:
(2 + (3 * 4)) - (5 / (1 + 1))
Resultado: 12
```

4. Modifique el lenguaje para incluir la asignación de variables con expresiones aritméticas.

```
uments\GitHub\Compiladores-Labs\compilers-2024-students-JPO\lab-1":/home lab1-image
root@5aa63e652a8c:/home# #!/bin/bash
root@5aa63e652a8c:/home# flex ./files/simple_language.l
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@5aa63e652a8c:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-wconflicts-sr]
./files/simple_language.y: note: rerun with option '-wcounterexamples' to generate conflict counterexamples
root@5aa63e652a8c:/home# g++ -c lex.yy.c
root@5aa63e652a8c:/home# g++ -c y.tab.c
root@5aa63e652a8c:/home# g++ -o calc y.tab.o lex.yy.o
root@5aa63e652a8c:/home# ./calc
Ingrese expresiones o asignaciones:
a = (5 * (3 + 2)) - 7
Asignación: a = 18
b = (a + 4) / 2
Asignación: b = 11
```

```
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@8f7eaccd54e2:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-wconflicts-sr]
./files/simple_language.y: note: rerun with option '-wcounterexamples' to generate conflict counterexamples
root@8f7eaccd54e2:/home# g++ -c lex.yy.c
root@8f7eaccd54e2:/home# g++ -c y.tab.c
root@8f7eaccd54e2:/home# g++ -o calc y.tab.o lex.yy.o
root@8f7eaccd54e2:/home# ./calc
Ingrese expresiones o asignaciones:
p = (3 + 2) * 4
Asignación: p = 20
q = p / (1 + 1)
Asignación: q = 10
```

5. Agregue manejo de errores al compilador para detectar tokens inválidos en el programa fuente.

```
acc -dtv ./files/simple_language.y
g++ -c lex.yy.c
g++ -c y.tab.c
g++ -o calc y.tab.o lex.yy.o
root@d595f2f3d3f2:/home# yacc -dtv ./files/simple_language.y
./files/simple_language.y: warning: 16 shift/reduce conflicts [-Wconflicts-sr]
./files/simple_language.y: note: rerun with option '-Wcounterexamples' to generate conflict counterexamples
root@d595f2f3d3f2:/home# g++ -c lex.yy.c
root@d595f2f3d3f2:/home# g++ -c y.tab.c
root@d595f2f3d3f2:/home# g++ -o calc y.tab.o lex.yy.o
root@d595f2f3d3f2:/home# ./calc
Ingrese expresiones o asignaciones:
z = 10 / 0
Error: División por cero
Asignación: z = 0
a = 2 @ 3
Caracter no reconocido: @ (Código ASCII: 64)
Asignación: a = 2
Error: syntax error
root@d595f2f3d3f2:/home# ./calc
Ingrese expresiones o asignaciones:
y = 4 +
Error: syntax error
root@d595f2f3d3f2:/home# ./calc
Ingrese expresiones o asignaciones:
x = 5 $ 3
Caracter no reconocido: $ (Código ASCII: 36)
Asignación: x = 5
Error: syntax error
root@d595f2f3d3f2:/home#
```

Enlace al Repositorio: <https://github.com/JPOrellana/compilers-2024-students-JPO>