

# Compiler Design for Lua

## Synopsis Report

Submitted by

- Aritra Basu - 160905126 - Roll no. 17
- Pavan Kalyan - 160905138 - Roll no. 22
- Sai Vignesh - 160905142 - Roll no. 23

# Introduction

Lua is an extension programming language designed to support general procedural programming with data description facilities.

It also offers good support for object-oriented programming, functional programming, and data-driven programming.

Lua is intended to be used as a powerful, light-weight scripting language for any program that needs one. Lua is implemented as a library, written in clean C (that is, in the common subset of ANSI C and C++).

## BNF Grammar for Lua

```
chunk ::= {stat [";"]} [laststat [";"]]
```

```
block ::= chunk
```

```
stat ::= varlist "=" explist |  
functioncall |  
do block end |  
while exp do block end |  
repeat block until exp |  
if exp then block {elseif exp then block} [else block] end |  
for Name "=" exp "," exp ["," exp] do block end |  
for namelist in explist do block end |  
function funcname funcbody |  
local function Name funcbody |  
local namelist ["=" explist]
```

```
laststat ::= return [explist] | break
```

```
funcname ::= Name {"." Name} [":" Name]
```

```
varlist ::= var {"," var}
```

```
var ::= Name | prefixexp "[" exp "]" | prefixexp "." Name
```

```
namelist ::= Name {"," Name}
```

```
explist ::= {exp ","} exp
```

```
exp ::= nil | false | true | Number | String | "..." | function |
```

```

prefixexp | tableconstructor | exp binop exp | unop exp

prefixexp ::= var | functioncall | "(" exp ")"

functioncall ::= prefixexp args | prefixexp ":" Name args

args ::= "(" [explist] ")" | tableconstructor | String

function ::= function funcbody

funcbody ::= "(" [parlist] ")" block end

parlist ::= namelist ["," "..."] | "..."

tableconstructor ::= "{" [fieldlist] "}"

fieldlist ::= field {fieldsep field} [fieldsep]

field ::= "[" exp "]" "=" exp | Name "=" exp | exp

fieldsep ::= "," | ";"

binop ::= "+" | "-" | "*" | "/" | "^" | "%" | ".." |
"<" | "<=" | ">" | ">=" | "==" | "~=" |
and | or

unop ::= "-" | not | "#"

```