

COMPILER DESIGN LAB

Compiler Design Lab Project

LANGUAGE MANUAL

Source Language Specifications

Syntax:

- For displaying the result of the following program code - the “output” command is used
- output()
- For getting the input from the user - the “input” command is used
- input()

Comments:

- For writing comments - “#” is used

Data Types:

For assigning “=” is used.

- String - “str”
- Integer - “int”
- Float or Double - “double”
- Boolean - “bool”

String:

str text= “Hello world”

Integer:

int a = 34

Float or Double:

double a = 57.9

Boolean:

bool = True / False

Operators:

Arithmetic operators:

- Addition - "+" -> $x + y$
- Subtraction - "-" -> $x - y$
- Multiplication - "*" -> $x * y$
- Division - "/" -> x / y

Comparison operators:

- Equal - "==" -> $x == y$
- Not equal - "!=" -> $x != y$
- Greater than - ">" -> $x > y$
- Less than - "<" -> $x < y$
- Greater than or equal to - ">=" -> $x >= y$
- Less than or equal to - "<=" -> $x <= y$

Logical operators:

- AND - "and"
- OR - "or"
- NOT - "not"

If Else:

- If else condition statements syntax

if (condition) then

.....

end

- Nested if-else condition syntax

if (condition) then

.....

else if (condition) then

.....

end

Loops:

- For loop syntax

for(init,condition,inc/dec)

.....

endfor

- While loop

while(condition)

.....

endwhile

Functions:

- Basic functions syntax

```
function function_name (parameters)
```

```
.....
```

```
.....
```

```
endfun
```

Sample example programs:

1. Sample print Hello World program

```
output("Hello World");
```

2. Using Operations

```
int a = 5;
```

```
int b = 10;
```

```
str text = "Compiler Design";
```

```
str user;
```

```
input(user);
```

```
output(a+b);
```

```
output (a-b);
```

```
output(text);
```

3. Using if-else statements

```
int a = 4;  
  
int b = 7;  
  
if(a>b) then  
    output(a);  
  
else  
    output(b);  
  
end
```

4. Using Loops

```
int a = 7;  
  
while(a > 10){  
    output (a);  
    a = a+1;  
}  
  
endwhile
```

Test cases

Test case 1:

```
1. #include<stdio.h>  
2.  
3. int main()  
4. {  
5.     int a=0;  
6.     for (a = 0; a < 10; a++)
```

```
7.      {
8.          return(a);
9.      }
10.     endfor
11.     while(a>0) {
12.         a--;
13.     }
14.     endwhile
15. }
```

Test case 2:

```
#include<stdio.h>

int myfunc(int a)
{
    return a;
}

endfun

void main()
{
    int i,n;

    myfunc(i,n); //detects error
}
```

Test case 3:

```
#include <stdio.h>

int main(){
```

```
int x,y;  
  
x + y = 23*78;  
  
return 0;  
}
```