

CD LAB 6:

NAME: Janvii RV

SRN: PES2UG22CS232

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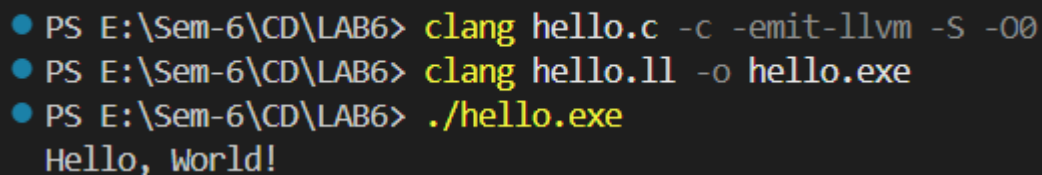
CODE:

hello.c

```
#include<stdio.h>

int main(){
    printf("Hello, World!\n");
    return 0;
}
```

OUTPUT:



```
PS E:\Sem-6\CD\LAB6> clang hello.c -c -emit-llvm -S -O0
PS E:\Sem-6\CD\LAB6> clang hello.ll -o hello.exe
PS E:\Sem-6\CD\LAB6> ./hello.exe
Hello, World!
```

CODE:

demo2.c

```
#include<stdio.h>

int main(){
    for(int i=0; i<15; i++){
        printf("%d\n", i);
    }
}
```

OUTPUT:

```

PS E:\Sem-6\CD\LAB6> clang demo2.c -c -emit-llvm -S -O0 -fno-discard-value-names
PS E:\Sem-6\CD\LAB6> clang demo2.ll -o demo2.exe
PS E:\Sem-6\CD\LAB6> ./demo2.exe
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14

```

CODE:

demo3.ll

```
@s1 = constant [44 x i8] c"Hi!\0a- Name: Janvii RV\0a- Srn: PES2UG22CS232\0a\00"
```

```
declare i32 @printf(i8*, ...)
```

```
define i32 @main() {
```

```
    %s1_ptr = getelementptr [44 x i8], [44 x i8]* @s1, i32 0, i32 0
```

```
    call i32 @printf(i8*, ...) @printf(i8* %s1_ptr)
```

```
    ret i32 0
```

```
}
```

OUTPUT:

```

PS E:\Sem-6\CD\LAB6> clang demo3.ll -o demo3.exe
warning: overriding the module target triple with x86_64-pc-windows-msvc19.43.34810 [-Woverride-module]
1 warning generated.
PS E:\Sem-6\CD\LAB6> ./demo3.exe
Hi!
- Name: Janvii RV
- Srn: PES2UG22CS232

```

CODE:

```
script.py
```

```

llvm = r'''@s1 = constant [44 x i8] c"Hi!\0a- Name: Janvii RV\0a- Srn:
PES2UG22CS232\0a\00"

declare i32 @printf(i8*, ...)

define i32 @main() {
    %s1_ptr = getelementptr [44 x i8], [44 x i8]* @s1, i32 0, i32 0
    call i32 @printf(i8* %s1_ptr)
    ret i32 0
}
'''

with open('output.ll', 'w') as file:
    file.write(llvm)

```

OUTPUT:

```

≡ output.ll
1  @s1 = constant [44 x i8] c"Hi!\0a- Name: Janvii RV\0a- Srn: PES2UG22CS232\0a\00"
2
3  declare i32 @printf(i8*, ...)
4
5  define i32 @main() {
6      %s1_ptr = getelementptr [44 x i8], [44 x i8]* @s1, i32 0, i32 0
7      call i32 @printf(i8* %s1_ptr)
8      ret i32 0
9  }

```

```

• PS E:\Sem-6\CD\LAB6> python script.py
• PS E:\Sem-6\CD\LAB6> clang output.ll -o output.exe
warning: overriding the module target triple with x86_64-pc-windows-msvc19.43.34810 [-Wov
1 warning generated.
• PS E:\Sem-6\CD\LAB6> ./output.exe
Hi!
- Name: Janvii RV
- Srn: PES2UG22CS232
❖ PS E:\Sem-6\CD\LAB6>

```

CODE:

llvm.py

```

llvm_global = r'''@s1 = constant [4 x i8] c"Hi\0A\00" '''
llvm_main = r'''define 132 @main() {'''
llvm_print = r'''
    $s1_ptr = getelementptr [4 x i8], [4 x i8]* @s1, i32 0, i32 0
    call 132(i8*, ...) @printf(i8* %s1_ptr)'''
llvm_ret = r'''
ret 132 0

```

```

}'''

with open('output.ll', 'w') as file:
    file.write(llvm_global)
    file.write(llvm_main)
    file.write(llvm_print)
    file.write(llvm_print)
    file.write(llvm_print)
    file.write(llvm_ret)

```

OUTPUT:

```

- SH: PES20G2ZCS223
PS E:\Sem-6\CD\LAB6> python llvm.py
PS E:\Sem-6\CD\LAB6> 

```

```

≡ output.ll
1  @s1 = constant [4 x i8] c"Hi\0A\00" 'define 132 @main) {
2      $s1_ptr = getelementptr [4 x 18], [4 x 18]* @s1, i32 0, i32 0
3      call 132(18*, ...) @printf(i8* %s1_ptr)
4      $s1_ptr = getelementptr [4 x 18], [4 x 18]* @s1, i32 0, i32 0
5      call 132(18*, ...) @printf(i8* %s1_ptr)
6      $s1_ptr = getelementptr [4 x 18], [4 x 18]* @s1, i32 0, i32 0
7      call 132(18*, ...) @printf(i8* %s1_ptr)
8  ret 132 0
9  }

```