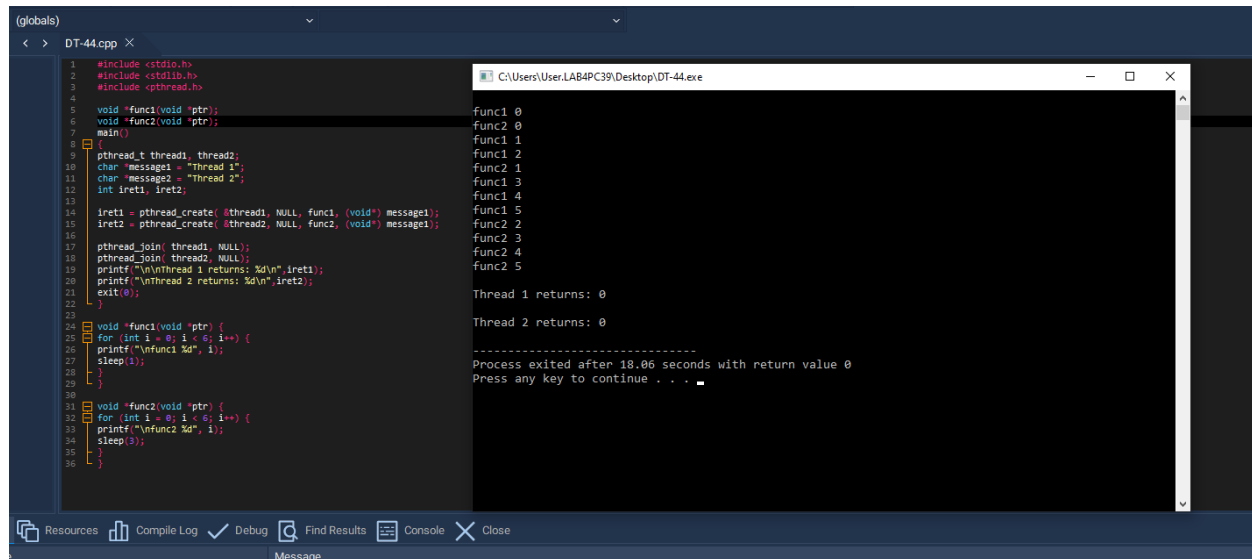


LAB NUMBER 3

1) Implement the above code and paste the screen shot of the output.



The screenshot shows a C++ IDE with a file named DT-44.cpp. The code defines two threads, thread1 and thread2, each executing a function (func1 and func2) that prints a message and returns a value. The output window shows the execution results, including the messages 'Thread 1' and 'Thread 2', the return values of the functions, and the process exit time.

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <pthread.h>
4
5 void *func1(void *ptr);
6 void *func2(void *ptr);
7
8 main()
9 {
10     pthread_t thread1, thread2;
11     char *message1 = "Thread 1";
12     char *message2 = "Thread 2";
13     int iret1, iret2;
14
15     iret1 = pthread_create(&thread1, NULL, func1, (void*) message1);
16     iret2 = pthread_create(&thread2, NULL, func2, (void*) message2);
17
18     pthread_join(thread1, NULL);
19     pthread_join(thread2, NULL);
20     printf("\nThread 1 returns: %d\n", iret1);
21     printf("\nThread 2 returns: %d\n", iret2);
22     exit(0);
23 }
24
25 void *func1(void *ptr) {
26     for (int i = 0; i < 5; i++) {
27         printf("func1 %d", i);
28         sleep(1);
29     }
30 }
31
32 void *func2(void *ptr) {
33     for (int i = 0; i < 5; i++) {
34         printf("func2 %d", i);
35         sleep(3);
36     }
37 }
```

Output:

```
func1 0
func2 0
func1 1
func1 2
func2 1
func1 3
func1 4
func1 5
func2 2
func2 3
func2 4
func2 5
Thread 1 returns: 0
Thread 2 returns: 0
-----
Process exited after 18.06 seconds with return value 0
Press any key to continue . . .
```

2) Describe the following line of code:

iret1 = pthread_create(&thread1, NULL, print_message_function, (void*) message1);

The given line of code is used to create a new thread using the `pthread_create` function in C. Here's what each part of the statement does:

- `iret1` stores the return value of `pthread_create`, which helps check if the thread was created successfully. If 0 is returned, it means the thread was created successfully; otherwise, an error occurred.
- `&thread1` is a pointer to a `pthread_t` variable, which will store the unique ID of the new thread.
- `NULL` is passed as the second argument, meaning the thread will use default attributes.
- `print_message_function` is the function that the new thread will execute.
- `(void*) message1` is the argument that will be passed to `print_message_function`. The `(void*)` typecast ensures compatibility with the expected function signature.

In summary, this line creates a new thread (`thread1`), which runs `print_message_function`, passing `message1` as an argument. The return value (`iret1`) helps in checking if the thread creation was successful.