1. Find the outputs of the following code. **[Run this code using any IDE multiple times and analyse the outputs]**

```c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <pthread.h>
void *t_func(void *arg);
int var=0;
int t_id[] = {1, 2};
int main() {
    pthread_t t1;
    pthread_t t2;
    int a1[] = {t_id[0], 5};
    int a2[] = {t_id[1], 3};
    pthread_create(&t1, NULL, t_func, (void *)a1);
    pthread_join(t1, NULL);
    pthread_create(&t2, NULL, t_func, (void *)a2);
    pthread_join(t2, NULL);
    printf("Value of var after operations of threads: %d\n", var);

    return 0;
}
void *t_func(void *arg) {
        int *x = arg;
        if(x[0] == 1) {
            printf("Entered in Thread :%d\n", x[0]);
            var += x[1];
            printf("Value of var after the operation of Thread %d: %d\n", x[0], var);
            printf("Operation Done by Thread %d...\n", x[0]);
        }
        else {
            printf("Entered in Thread :%d\n", x[0]);
            var -= x[1];
            printf("Value of var after the operation of Thread %d: %d\n", x[0], var);
            printf("Operation Done by Thread %d...\n", x[0]);
        }

}
```

Output:

```
Entered in Thread :1
Value of var after the operation of Thread 1: 5
Operation Done by Thread 1...
Entered in Thread :2
Value of var after the operation of Thread 2: 2
Operation Done by Thread 2...
Value of var after operations of threads: 2
```

2. Find the outputs of the following code. **[Run this code using any IDE multiple times and analyse the outputs]**

```c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <pthread.h>
int t_id[] = {1, 2, 3};
int var = 50;
void *t_func(void *v);
int main() {
        pthread_t t[3];
        for(int i = 0; i < 3; i++) {
            pthread_create(&t[i], NULL, (void *)t_func, &t_id[i]);
            pthread_join(t[i], NULL);
        }
        printf("Final value of var: %d\n", var);
        return 0;
}
void *t_func(int *v) {
    if(*v == 0) {
        printf("Entered in Thread %d...\n", *v);
        for(int i = 0; i < 3; i++) {
            var += 5;
            printf("Thread %d modified value %d\n", *v, var);
        }
        printf("Modification done by Thread %d, value %d\n", *v, var);
    }
    else if(*v == 1) {
        printf("Entered in Thread %d...\n", *v);
        for(int i = 0; i < 3; i++) {
            var -= 4;
            printf("Thread %d modified value %d\n", *v, var);
        }
        printf("Modification done by Thread %d, value %d\n", *v, var);
    }
    else {
        printf("Entered in Thread %d...\n", *v);
        for(int i = 0; i < 3; i++){
            var *= 2;
            printf("Thread %d modified value %d\n", *v, var);
        }
        printf("Modification done by Thread %d, value %d\n", *v, var);
    }
}
```

Output:

```
Entered in Thread 1...
Thread 1 modified value 46
Thread 1 modified value 42
Thread 1 modified value 38
Modification done by Thread 1, value 38
Entered in Thread 2...
Thread 2 modified value 76
Thread 2 modified value 152
Thread 2 modified value 304
Modification done by Thread 2, value 304
Entered in Thread 3...
Thread 3 modified value 608
Thread 3 modified value 1216
Thread 3 modified value 2432
Modification done by Thread 3, value 2432
Final value of var: 2432
```

3. Find the outputs of the following code. **[Run this code using any IDE multiple times and analyse the outputs]**

```c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <pthread.h>
int t_id[] = {1, 2, 3};
var = 50;
void *t_func(int *v);
int main() {
    pthread_t t[3];
    for(int i = 0; i < 3; i++) {
        pthread_create(&t[i], NULL, (void *)t_func, &t_id[i]);
    }
    for(int i = 0; i < 3; i++) {
        pthread_join(t[i], NULL);
    }
    printf("Final value of var: %d\n", var);
    return 0;
}
void *t_func(int *v) {
    if(*v == 0) {
        printf("Entered in Thread %d...\n", *v);
        for(int i = 0; i < 3; i++) {
            var += 5;
            printf("Thread %d modified value %d\n", *v, var);
        }
        printf("Modification done by Thread %d, value %d\n", *v, var);
    }
    else if(*v == 1) {
        printf("Entered in Thread %d...\n", *v);
        for(int i = 0; i < 3; i++) {
            var -= 4;
            printf("Thread %d modified value %d\n", *v, var);
        }
        printf("Modification done by Thread %d, value %d\n", *v, var);
    }
    else {
        printf("Entered in Thread %d...\n", *v);
        for(int i = 0; i < 3; i++) {
            var *= 2;
            printf("Thread %d modified value %d\n", *v, var);
        }
        printf("Modification done by Thread %d, value %d\n", *v, var);
    }
}
```

Output:

```
Entered in Thread 1...
Thread 1 modified value 46
Thread 1 modified value 42
Thread 1 modified value 38
Modification done by Thread 1, value 38
Entered in Thread 2...
Thread 2 modified value 76
Thread 2 modified value 152
Thread 2 modified value 304
Modification done by Thread 2, value 304
Entered in Thread 3...
Thread 3 modified value 608
Thread 3 modified value 1216
Thread 3 modified value 2432
Modification done by Thread 3, value 2432
Final value of var: 2432
```