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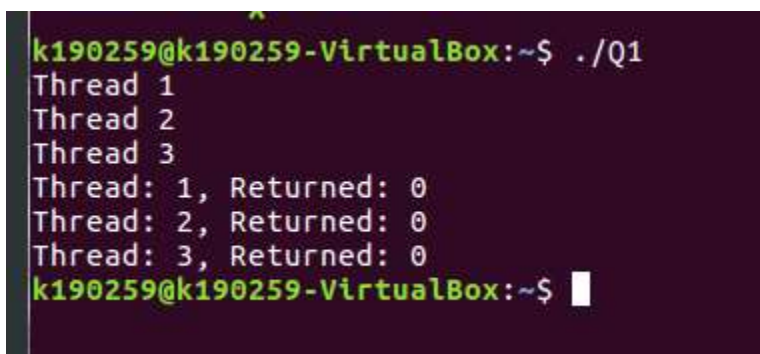
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Q1:

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<pthread.h>
void * func1(pthread_t id)
{
    return NULL;
}
int main()
{
    pthread_t thread_id[3];
    for(int i = 0; i < 3 ;i++)
    {
        if(pthread_create(&thread_id[i] , NULL , func1 , NULL) != 0)
        {
            printf("Cannot create Thread...!!");
        }
        printf("Thread %d\n" , i+1);|
    }
    int x;
    for(int i = 0; i < 3 ;i++)
    {
        x=pthread_join(thread_id[i] , NULL);
        printf("Thread: %d, Returned: %d\n" , i+1 ,x);
    }
    return 0;
}
```

Screenshot:



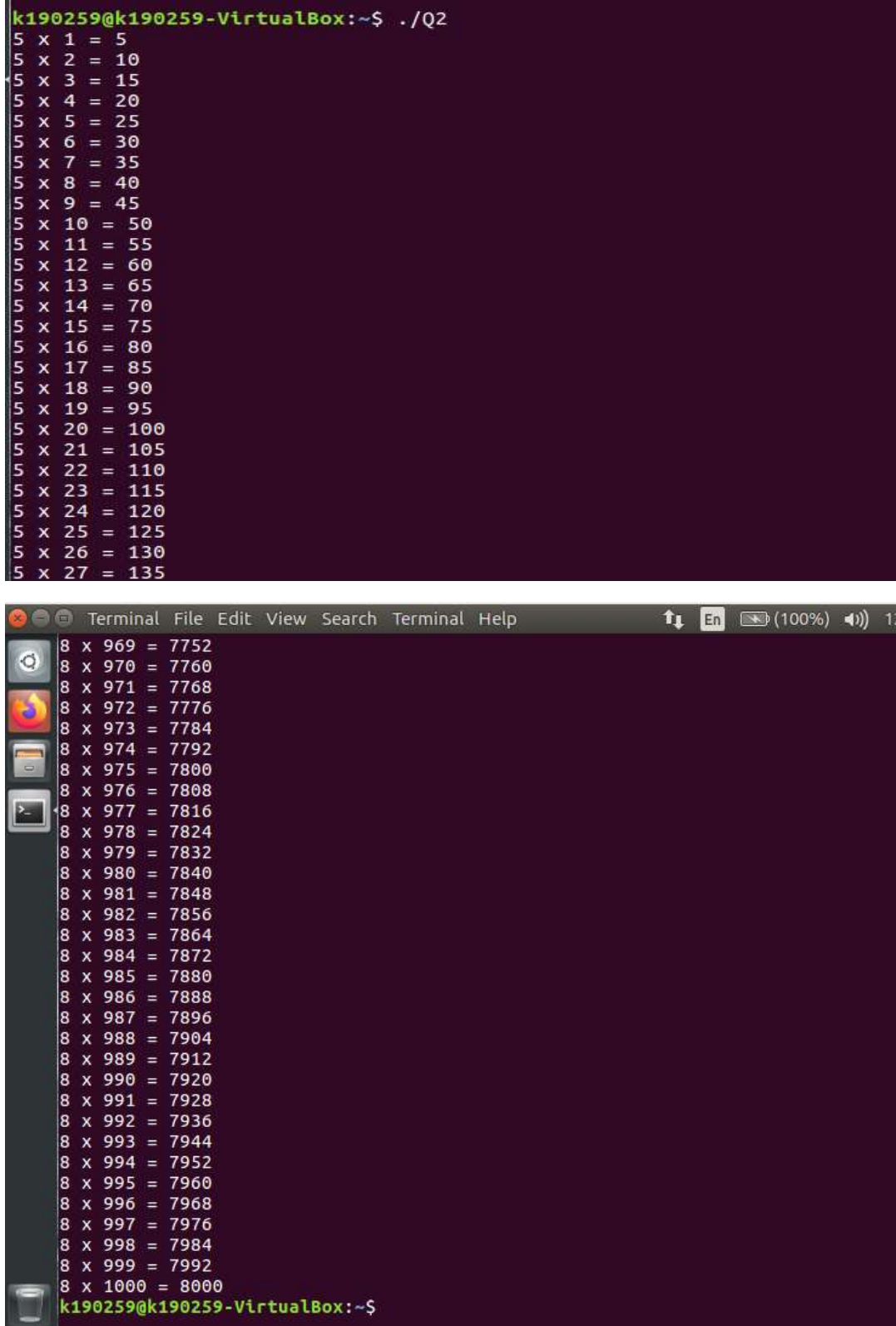
```
k190259@k190259-VirtualBox:~$ ./Q1
Thread 1
Thread 2
Thread 3
Thread: 1, Returned: 0
Thread: 2, Returned: 0
Thread: 3, Returned: 0
k190259@k190259-VirtualBox:~$
```

Q2:

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<pthread.h>
int total = 1000;
void *print(int num)
{
    for(int i = 0 ; i < total ; i++)
    {
        printf("%d x %d = %d\n",num,i+1,num *(i+1));
    }
    return NULL;
}
int main()
{
    pthread_t thread_id[4];
    int table[4]={5,6,7,8};
    pthread_create(&thread_id[0], NULL, print, table[0]);
    pthread_create(&thread_id[1], NULL, print, table[1]);
    pthread_create(&thread_id[2], NULL, print, table[2]);
    pthread_create(&thread_id[3], NULL, print, table[3]);
    pthread_join(thread_id[0], NULL);
    pthread_join(thread_id[1], NULL);
    pthread_join(thread_id[2], NULL);
    pthread_join(thread_id[3], NULL);
    return 0;
}
```

## Screenshot:



```
k190259@k190259-VirtualBox:~$ ./Q2
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
5 x 11 = 55
5 x 12 = 60
5 x 13 = 65
5 x 14 = 70
5 x 15 = 75
5 x 16 = 80
5 x 17 = 85
5 x 18 = 90
5 x 19 = 95
5 x 20 = 100
5 x 21 = 105
5 x 22 = 110
5 x 23 = 115
5 x 24 = 120
5 x 25 = 125
5 x 26 = 130
5 x 27 = 135

8 x 969 = 7752
8 x 970 = 7760
8 x 971 = 7768
8 x 972 = 7776
8 x 973 = 7784
8 x 974 = 7792
8 x 975 = 7800
8 x 976 = 7808
8 x 977 = 7816
8 x 978 = 7824
8 x 979 = 7832
8 x 980 = 7840
8 x 981 = 7848
8 x 982 = 7856
8 x 983 = 7864
8 x 984 = 7872
8 x 985 = 7880
8 x 986 = 7888
8 x 987 = 7896
8 x 988 = 7904
8 x 989 = 7912
8 x 990 = 7920
8 x 991 = 7928
8 x 992 = 7936
8 x 993 = 7944
8 x 994 = 7952
8 x 995 = 7960
8 x 996 = 7968
8 x 997 = 7976
8 x 998 = 7984
8 x 999 = 7992
8 x 1000 = 8000
k190259@k190259-VirtualBox:~$
```

Q3:

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<pthread.h>
#include<sys/wait.h>
struct th
{
    int num;
    int iterator;
    int *i;
};
typedef struct th thread;
void * func(void *arg )
{
    thread *th1= (thread*)arg;
    printf("Hello from thread %d I was created in iteration %d\n",*(th1->i),
th1->iterator);
    *(th1->i) = *(th1->i)+1;
    return NULL;
}
int main()
```

```
int main()
{
    thread th1;
    int n,i,j;
    printf("Enter No. of threads you want to create: ");
    scanf("%d",&n);
    int arr[2];
    pthread_t thread_id[n+2];
    int iterator=0;
    for(i=0;i<n;i++)
    {
        int tmp=i;
        int tmp2=i;
        for(j=0;j<=5 && j<=(n-i);j++)
        {
            th1.num=i;
            th1.iterator=iterator;
            th1.i=&tmp;
            printf("I am Thread main creating thread %d in %d iteration\n",i,iterator);
            pthread_create(&thread_id[i],NULL,func,(void*)&th1);
            i++;
        }
        sleep(1);
        iterator++;
    }
    return 0;
}
```

### Screenshot:

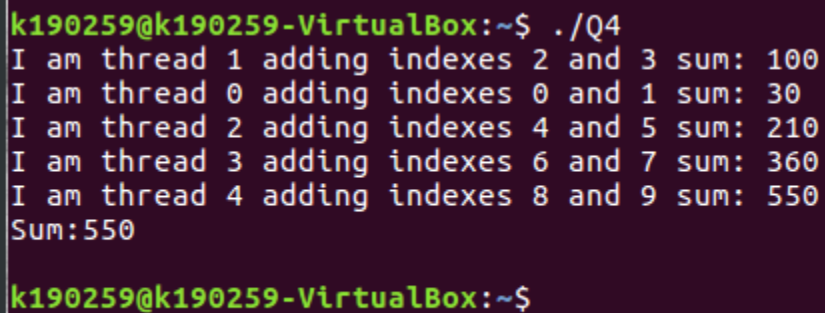
```
k190259@k190259-VirtualBox:~$ touch Q3.c
k190259@k190259-VirtualBox:~$ gedit Q3.c
k190259@k190259-VirtualBox:~$ gcc Q3.c -o Q3 -lpthread
k190259@k190259-VirtualBox:~$ ./Q3
Enter No. of threads you want to create: 3
I am Thread main creating thread 0 in 0 iteration
I am Thread main creating thread 1 in 0 iteration
Hello from thread 0 I was created in iteration 0
Hello from thread 0 I was created in iteration 0
k190259@k190259-VirtualBox:~$ ./Q3
Enter No. of threads you want to create: 6
I am Thread main creating thread 0 in 0 iteration
I am Thread main creating thread 1 in 0 iteration
Hello from thread 0 I was created in iteration 0
Hello from thread 0 I was created in iteration 0
I am Thread main creating thread 2 in 0 iteration
I am Thread main creating thread 3 in 0 iteration
Hello from thread 2 I was created in iteration 0
Hello from thread 3 I was created in iteration 0
I am Thread main creating thread 5 in 1 iteration
Hello from thread 5 I was created in iteration 1
k190259@k190259-VirtualBox:~$
```

Q4:

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<pthread.h>
int elements[10]={10,20,30,40,50,60,70,80,90,100};
int sum=0;
void *addition(void *argument)
{
    int a=(int)argument;
    sum=sum+elements[a]+elements[a+1];
    printf("I am thread %d adding indexes %d and %d sum: %d\n",a/2,a,a+1,sum);
    return NULL;
}
int main()
{
    pthread_t pth[5];
    int n=0,i,x;
    for(i=0;i<10;i+=2)
    {
        int retval=pthread_create(&pth[n],NULL,addition,(void*)i);
        n++;
    }
    for(i=0;i<n;i++)
    {
        int x=pthread_join(pth[i],NULL);
    }
    printf("Sum:%d",sum);
    return 0;
}
```

Screenshot:



```
k190259@k190259-VirtualBox:~$ ./Q4
I am thread 1 adding indexes 2 and 3 sum: 100
I am thread 0 adding indexes 0 and 1 sum: 30
I am thread 2 adding indexes 4 and 5 sum: 210
I am thread 3 adding indexes 6 and 7 sum: 360
I am thread 4 adding indexes 8 and 9 sum: 550
Sum:550

k190259@k190259-VirtualBox:~$
```

Q5:

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<pthread.h>
#include<sys/wait.h>
int sponsors=0;
int registered=0;
void *registration(void *args)
{
    if(registered<=100)
    {
        printf("Participant %d.....Total Registered: %d\n" ,(int)args+1,
        ++registered);
    }
    else
    {
        printf("No more space...!!\n");
    }
    return NULL;
}
void *announcements(void *args)
{
    printf("Participant %d.....Currently there are no announcements\n",
    (int)args+1);
    return NULL;
}
void *handle_sponsors(void *args)
{
    printf("Participant %d.....Number of Sponosors: %d\n" ,(int)args+1,
    ++sponsors);
```



## Screenshot:

```
k190259@k190259-VirtualBox:~$ ./Q5
Participant 1 went to volunteer 2 to [Announcments] counter...!!
Participant 2 went to volunteer 2 to [Announcments] counter...!!
Participant 3 went to volunteer 4 to [Queries] counter...!!
Participant 1.....Currently there are no announcements
Participant 3.....Currently there are no announcements
Participant 4 went to volunteer 3 to [Handle_Sponsors] counter...!!
Participant 5 went to volunteer 4 to [Queries] counter...!!
Participant 6 went to volunteer 4 to [Queries] counter...!!
Participant 5.....Total Registered: 2
Participant 7 went to volunteer 4 to [Queries] counter...!!
Participant 4.....Total Registered: 1
Participant 8 went to volunteer 3 to [Handle_Sponsors] counter...!!
Participant 2.....Total Registered: 3
Participant 7.....Currently there are no announcements
Participant 6.....Query Resolved...!!
Participant 9 went to volunteer 1 to [Registration] counter...!!
Participant 8.....Query Resolved...!!
Participant 10 went to volunteer 1 to [Registration] counter...!!
Participant 9.....Total Registered: 4
Participant 11 went to volunteer 3 to [Handle_Sponsors] counter...!!
Participant 12 went to volunteer 1 to [Registration] counter...!!
Participant 10.....Number of Sponosors: 1
Participant 13 went to volunteer 2 to [Announcments] counter...!!
Participant 14 went to volunteer 3 to [Handle_Sponsors] counter...!!
Participant 15 went to volunteer 3 to [Handle_Sponsors] counter...!!
Participant 16 went to volunteer 4 to [Queries] counter...!!
Participant 17 went to volunteer 3 to [Handle_Sponsors] counter...!!
Participant 18 went to volunteer 1 to [Registration] counter...!!
Participant 19 went to volunteer 2 to [Announcments] counter...!!
Participant 20 went to volunteer 2 to [Announcments] counter...!!
Participant 21 went to volunteer 3 to [Handle_Sponsors] counter...!!
```



```
Participant 81.....Total Registered: 23
Participant 36.....Number of Sponosors: 11
Participant 82.....Total Registered: 24
Participant 32.....Number of Sponosors: 12
Participant 45.....Query Resolved...!!
Participant 54.....Query Resolved...!!
Participant 20.....Total Registered: 12
Participant 28.....Currently there are no announcements
Participant 29.....Total Registered: 13
Participant 30.....Number of Sponosors: 13
Participant 31.....Number of Sponosors: 14
Participant 34.....Query Resolved...!!
Participant 39.....Number of Sponosors: 15
Participant 41.....Query Resolved...!!
Participant 44.....Number of Sponosors: 16
Participant 48.....Query Resolved...!!
Participant 96.....Total Registered: 25
Participant 49.....Total Registered: 14
Participant 98 went to volunteer 1 to [Registration] counter...!!
Participant 99 went to volunteer 1 to [Registration] counter...!!
Participant 100 went to volunteer 1 to [Registration] counter...!!
Participant 90.....Number of Sponosors: 24
Participant 88.....Number of Sponosors: 25
Participant 91.....Total Registered: 26
Participant 92.....Query Resolved...!!
Participant 93.....Number of Sponosors: 26
Participant 95.....Currently there are no announcements
Participant 94.....Total Registered: 27
Participant 51.....Number of Sponosors: 6
Participant 98.....Total Registered: 29
Participant 99.....Total Registered: 30
Participant 100.....Query Resolved...!!
k190259@k190259-VirtualBox:~$ █
```