KHUSHBU PATEL (150034)

ASSIGNMENT : 3 MULTI-THREADING

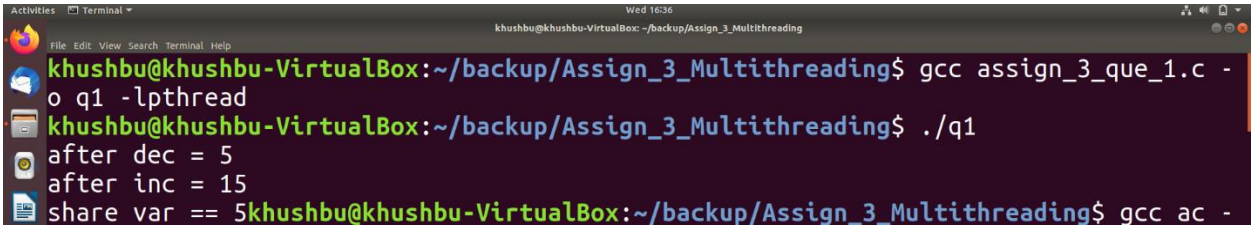
QUE : 1) 1.Write a multithreading program, where threads runs same shared golbal variable of

the process between them.

```
#include<stdio.h>
#include<stdlib.h>
#include<pthread.h>
int sharevar=5;
 void *thread_sum(void *arg)
{
        sharevar+=10;
        printf("after inc = %d \n",sharevar);
}
void *thread_subtract(void *arg)
{
        sharevar-=10;
        printf("after dec = %d \n",sharevar);
}
int main()
{
pthread_t thread1,thread2;
pthread_create(&thread1 , NULL ,thread_sum,NULL );
pthread_create(&thread2 , NULL ,thread_subtract,NULL );
pthread_join(thread1,NULL);
pthread_join(thread2,NULL);
printf("share var == %d",sharevar);
```

return 0;

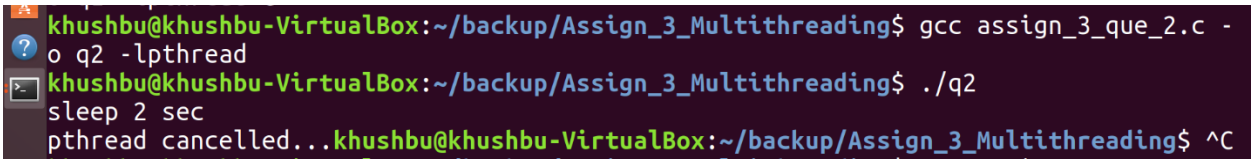
}



QUE : 2) 2.Write a program where thread cancel itself.(use pthread_cancel())

```
#include<stdio.h>

#include<stdlib.h>

#include<errno.h>

#include<unistd.h>

#include<pthread.h>

#include<sys/types.h>

#include<bits/types.h>

void *process(void *arg)

{

        printf("sleep 2 sec\n");

        sleep(2);


        printf("enter into thread....\n\n");

}

int main()

{

        pthread_t t_id;

         pthread_create(&t_id,NULL,process , NULL);


        if(errno) perror("pthread created..");
```

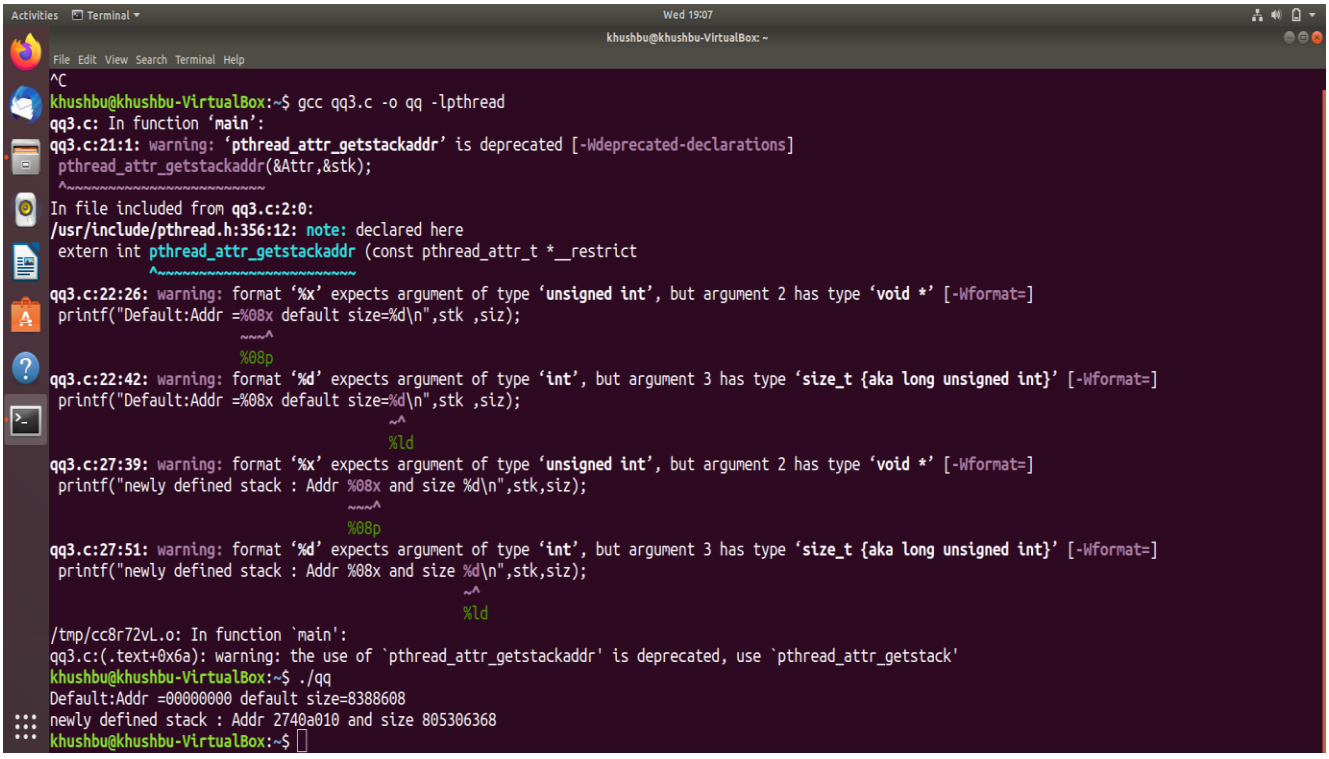
```
        int a;
        a=pthread_cancel(t_id);
        if(a==0)
{
        printf("pthread cancelled...");
}
}
```



QUE : 3) Write a program that changes the default properties of newly created posix threads.(ex: to change default pthread stack size)

```
#include<stdio.h>
#include<pthread.h>
#include<unistd.h>
#include<stdlib.h>
void * proc(void * param)
{
sleep(2);
return 0;
}
int main()
{
pthread_attr_t Attr;
pthread_t Id;
void *stk;
size_t siz;
```

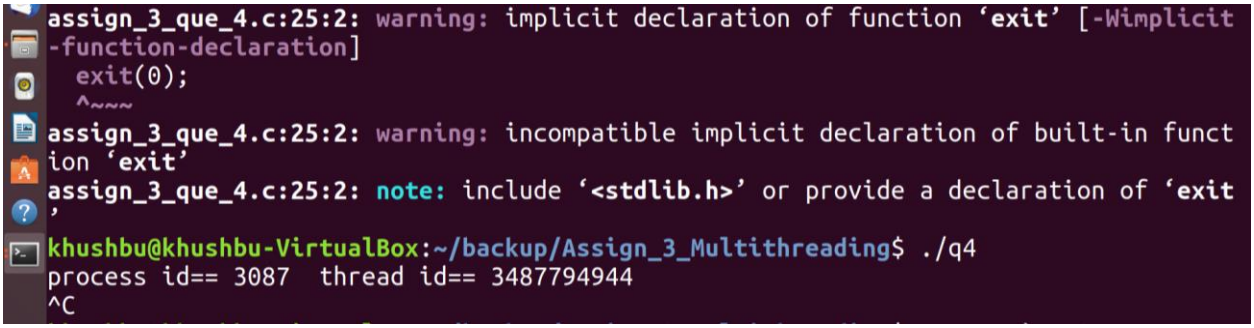
```
int err;
size_t my_stksize=0x30000000;
void *my_stack;
pthread_attr_init(&Attr);
pthread_attr_getstacksize(&Attr,&siz);
pthread_attr_getstackaddr(&Attr,&stk);
printf("Default:Addr =%08x default size=%d\n",stk ,siz);
my_stack=(void*)malloc(my_stksize);
pthread_attr_setstack(&Attr,my_stack,my_stksize);
pthread_create(&Id,&Attr,proc,NULL);
pthread_attr_getstack(&Attr,&stk,&siz);
printf("newly defined stack : Addr %08x and size %d\n",stk,siz);
sleep(3);
return 0;
}
```



QUE : 4) 4. Write a program where pthread task displays the thread id and also prints the calling

process pid.

```
#include<pthread.h>
pthread_t tid;
        void *thr_fn(void *arg)
{
        pid_t pid;
        pthread_t tid;
        pid=getpid();
        tid=pthread_self();
        printf("process id== %u  thread id== %u \n",(unsigned int)pid ,(unsigned int)tid);
        return 0;
}
int main(void)
{
        int err;
        err=pthread_create(&tid,NULL,thr_fn,NULL);
        if(err!=0)
{
        printf("can't create...%s\n",strerror(err));
}
        while(1);
        exit(0);
}
```



QUE : 5) Write a program that implements threads synchronization using mutex techniques.

```
#include<stdio.h>
#include<stdlib.h>
#include<semaphore.h>
#include<pthread.h>
int sharevar=5;
pthread_mutex_t my_mutex;
 void *thread_sum(void *arg)
{
        pthread_mutex_lock(&my_mutex);
        sharevar+=10;
        pthread_mutex_unlock(&my_mutex);
        printf("after summation = %d \n",sharevar);
}
        void *thread_subtract(void *arg)
{
        pthread_mutex_lock(&my_mutex);
        sharevar-=10;
        pthread_mutex_unlock(&my_mutex);
        printf("after subtraction = %d \n",sharevar);
}
```

```
int main()
{
        pthread_t thread1,thread2;
        pthread_mutex_init(&my_mutex , NULL);
pthread_create(&thread1 , NULL, thread_sum,NULL);
pthread_create(&thread2 , NULL, thread_subtract,NULL);
pthread_join(thread1,NULL);
pthread_join(thread2,NULL);
printf("share var == %d",sharevar);
return 0;
}
```

```
khushbu@khushbu-VirtualBox:~/backup/Assign_3_Multithreading$ gcc assign_3_que_5.c -
o q5 -lpthread
khushbu@khushbu-VirtualBox:~/backup/Assign_3_Multithreading$ ./q5
after summation = 15
after subtraction = 5
```