

IT TEST

1. Integration Testing

Test 1 full():

Correct Input

```
(kali㉿kali)-[~/RBU]
└─$ ./client -ff House/tcp nile1.txt nile2.txt nile3.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

nile1.txt
../House/tcp/nile1.txt
nile2.txt
../House/tcp/nile2.txt
nile3.txt
../House/tcp/nile3.txt
[+]Closing the connection.
```

Incorrect Input

```
└─$ ./client -ff House/tcp nile1.txt nile2.txt nile4.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

nile1.txt
../House/tcp/nile1.txt
nile2.txt
../House/tcp/nile2.txt
nile4.txt
../House/tcp/nile4.txt
[-]Error in reading file.: No such file or directory
```

TEST2

full_dir():

Incorrect input

```
└─$ ./client -fd /home/kali/temp0 /home/kali/temp4
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

.. //home/kali/temp0
/home/kali/temp0
/home/kali/temp4
/home/kali/temp0/temp01.txt
/home/kali/temp0/temp02.txt
/home/kali/temp0/temp03.txt
```

Correct Input

```
└─$ ./client -fd /home/kali/temp0 /home/kali/temp1 /home/kali/temp2
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

.. //home/kali/temp0
/home/kali/temp0
/home/kali/temp1
/home/kali/temp2
/home/kali/temp0/temp01.txt
/home/kali/temp0/temp02.txt
/home/kali/temp0/temp03.txt
/home/kali/temp1/temp01.txt
/home/kali/temp1/temp02.txt
/home/kali/temp1/temp03.txt
/home/kali/temp2/temp01.txt
/home/kali/temp2/temp02.txt
/home/kali/temp2/temp03.txt
[+]Closing the connection.
```

Test3

incremental():

Incorrect Input

```
└─$ ./client -if House/tcp nile1.txt nile2.txt nile10.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

../House/tcp/nile1.txt
last_backup : Oct 19
File changed at : Oct 19
Backup Needed
10 50

../House/tcp/nile2.txt
last_backup : Oct 19
File changed at : Oct 14
```

```
./server
Oct_19_14:10
[+]Server socket created successfully.
[+]Binding successfull.
[+]Listening....
go
../backup/backup_of_nile1.txt
stopped
```

Correct input

```
└─$ ./client -if House/tcp nile1.txt nile2.txt nile3.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

../House/tcp/nile1.txt
last_backup : Oct 19
File changed at : Oct 19
Backup Needed
10 50

../House/tcp/nile2.txt
last_backup : Oct 19
File changed at : Oct 14

../House/tcp/nile3.txt
last_backup : Oct 19
File changed at : Oct 14

[+]Closing the connection.
```

Test4

incremental_dir():

Correct Input

```
└─$ ./client -id /home/kali/temp0 /home/kali/temp1
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

/home/kali/temp0
/home/kali/temp1

/home/kali/temp0
last backup : Oct 19
Directory changed : Oct 19
backup needed
/home/kali/temp0/temp01.txt
/home/kali/temp0/temp02.txt
/home/kali/temp0/temp03.txt

/home/kali/temp1
last backup : Oct 19
Directory changed : Oct 16
[+]Closing the connection.
```

Incorrect input

```
└─$ ./client -id /home/kali/temp0 /home/kali/temp10
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

/home/kali/temp0
/home/kali/temp10

/home/kali/temp0
last backup : Oct 19
Directory changed : Oct 19
backup needed
/home/kali/temp0/temp01.txt
/home/kali/temp0/temp02.txt
/home/kali/temp0/temp03.txt
```

Test5

versioned():

Incorrect input

```
└─$ ./client -vf home/kali/House/tcp nile1.txt nile2.txt nile3.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

nile1.txt
../home/kali/House/tcp/nile1.txt
[-]Error in reading file.: No such file or directory
```

Correct Input

```
└─$ ./client -vf /House/tcp nile1.txt nile2.txt nile3.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

nile1.txt
../House/tcp/nile1.txt
nile2.txt
../House/tcp/nile2.txt
nile3.txt
../House/tcp/nile3.txt
[+]Closing the connection.
```

```
./server
Oct_19_14:17
[+]Server socket created successfully.
[+]Binding successfull.
[+]Listening....
nile1.txt
../backup/backup_at_Oct_19_14:17_of_nile1.txt
nile2.txt
../backup/backup_at_Oct_19_14:17_of_nile2.txt
nile3.txt
../backup/backup_at_Oct_19_14:17_of_nile3.txt
```

Test6

versioned_dir():

Incorrect input

```
$ ./client -vd /home/kali/temp0 /home/kali/test1
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

.. //home/kali/temp0
/home/kali/temp0
/home/kali/test1
/home/kali/temp0/temp01.txt
/home/kali/temp0/temp02.txt
/home/kali/temp0/temp03.txt
```

```
Couldnt not make file
make: *** [Makefile:10: run] Error 1
```

Correct Input

```
$ ./client -vd /home/kali/temp0 /home/kali/test
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

.. //home/kali/temp0
/home/kali/temp0
/home/kali/test
/home/kali/temp0/temp01.txt
/home/kali/temp0/temp02.txt
/home/kali/temp0/temp03.txt
/home/kali/test/cron_bkp
/home/kali/test/test.txt
/home/kali/test/test1
/home/kali/test/test
/home/kali/test/test1.c
/home/kali/test/test.c
[+]Closing the connection.
```



```

./server
Oct_19_14:19
[+]Server socket created successfully.
[+]Binding successfull.
[+]Listening....
../backup
/home/kali/backup/home/kali/temp0
/home/kali/backup/home/kali/test
../backup/home/kali/temp0/temp01.txt
../backup/home/kali/temp0/temp01_Oct_19_14:19.txt
../backup/home/kali/temp0/temp02.txt
../backup/home/kali/temp0/temp02_Oct_19_14:19.txt
../backup/home/kali/temp0/temp03.txt
../backup/home/kali/temp0/temp03_Oct_19_14:19.txt
../backup/home/kali/test/cron_bkp
../backup/home/kali/test/cron_bkp_Oct_19_14:19
../backup/home/kali/test/test.txt
../backup/home/kali/test/test_Oct_19_14:19.txt
../backup/home/kali/test/test1
../backup/home/kali/test/test1_Oct_19_14:19
../backup/home/kali/test/test
../backup/home/kali/test/test_Oct_19_14:19
../backup/home/kali/test/test1.c
../backup/home/kali/test/test1_Oct_19_14:19.c
../backup/home/kali/test/test.c
../backup/home/kali/test/test_Oct_19_14:19.c
stopped

```

Test7 scheduled():

Incorrect Input

```

└─$ ./client -sf "1 * * * *" nile1.txt nile2.txt nile3.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

nile1.txt cd /home/kali/RBU && ./client -ff 1 * * * * nile2.txt nile3.txt

[+]Closing the connection.

```

Correct Input

```

└─$ ./client -sf House/tcp "1 * * * *" nile1.txt nile2.txt nile3.txt
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

1 * * * * cd /home/kali/RBU && ./client -ff House/tcp nile1.txt nile2.txt nile3.txt

```

Test 8

Scheduled_dir():

Correct Input

```
└─$ ./client -sd "30 * * * *" /home/kali/temp0 /home/kali/temp1 /home/kali/Desktop
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

30 * * * * cd /home/kali/RBU && ./client -fd /home/kali/temp0 /home/kali/temp1 /home/kali/Desktop

[+]Closing the connection.
```

Incorrect Input

```
└─$ ./client -sd "30 * * * *"
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

Invalid Usage : No folder name entered!!!
Usage: /client -sd 'mm hh dom mon dow' dir1 dir2 dir3 .....
```

```
(kali@kali)-[~/RBU]
└─$ ./client -kk home/temp0
Last backup at : Oct 19
[+]Server socket created successfully.
[+]Connected to Server.

Invalid Option please choose from any of the options mentioned below
-ff for full backup for files
-fd for full backup for Directories
-if for incremental backup for files
-id for incremental backup for Directories
-vf for Versioned backup for files
-vd for Versioned backup for Directories
-sf for Scheduled backup for files
-sd for Scheduled backup for Directories
[+]Closing the connection.
```


UT TEST

CUNIT:

- CUnit is a lightweight system for writing, administering, and running unit tests in C.
- It provides C programmers a basic testing functionality with a flexible variety of user interfaces.
- CUnit is built as a static library which is linked with the user's testing code. It uses a simple framework for building test structures, and provides a rich set of assertions for testing common data types.

1. For send_file function:

Test Cases:

```
void send_file_sunny(void)
{
    CU_ASSERT_EQUAL(send_file("hash.txt",1234), 1);
    CU_ASSERT_EQUAL(send_file("hash1.txt",1235), 1);
}

void send_file_rainy(void)
{
    CU_ASSERT_EQUAL(send_file("hash9.txt",4321), 0);
    CU_ASSERT_EQUAL(send_file("hash10.txt",4322), 0);
}
```

2. For write_file() function Test Case:

```
void write_file_sunny(void)
{
    CU_ASSERT_EQUAL(write_file("test1.txt",8080), 1);
    CU_ASSERT_EQUAL(write_file("test2..txt",8089), 1);
}

void write_file_rainy(void)
{
    CU_ASSERT_EQUAL(write_file("test8.txt",8090), 0);
    CU_ASSERT_EQUAL(write_file("test9.txt",8070), 0);
}
```

REPORT:

```
$ gcc suite.c write_file.c send_file.c sunny_rainy_testcase.c -o A2 -lcunit
```

```
srira@DESKTOP-APN23A ~/RBU
```

```
$ ./A2.exe
```

```
CUUnit - A unit testing framework for C - Version 2.1-3
http://cunit.sourceforge.net/
```

```
Suite: suite write_file...
```

```
Test: Test for write_file() in sunny cases ...passed
```

```
Test: Test for write_file() in rainy cases ...passed
```

```
Suite: suite send_file...
```

```
Test: Test for send_file() in sunny cases ...passed
```

```
Test: Test for send_file() in rainy cases ...passed
```

```
Run Summary:  Type  Total    Ran Passed Failed Inactive
               suites   2      2   n/a    0      0
               tests    4      4    4     0      0
               asserts   8      8    8     0     n/a
```

```
Elapsed time = 0.031 seconds
```

IT_Plan

TEST CASE ID	STEP	PRECONDITIONS/DEPENDENCIES	TEST CASE	TEST DATA	EXPECTED RESULTS	RESULTS OBTAINED	STATUS(PASS/FAIL)
IT_01	Full backup of specified files	Files nile1.bt and nile2.bt should be present	using option [-f] with specified files	House/ftp/nile1.bt nile2.bt	Files backedup	DONE	PASS
	Full backup of specified files	Files nile4.bt and nile5.bt should not be present	using option [-f] with specified files	House/ftp/nile4.bt nile5.bt	error : Files do not exist	DONE	PASS
IT_02	Full backup of specified directories	temp0 and temp1 folders should be present	[-fd] option for directories	Directories to be backed up	Directories backup	DONE	PASS
	Incremental backup of specified files	The file that we provide to backup should not exist	Incremental backup files using [-f] option	Any file that has been changed today that you want to backup	Modified file backup	DONE	PASS
IT_03	Incremental backup of specified Directories	The directory which we provide should not exist	Incremental backup directories using [-fd] option	Backup directories that have been changed up today	Modified directories backup	DONE	PASS
IT_04	Versioned backup of specified files	none any file provided will work	using [-vf] option to version backup the files	Any file	Create a version of the file in the backup	DONE	PASS
IT_05	Versioned of specified Directories	none any directory provided will work	using [-vd] option to version backup the directories	Any directory	Create a version of the files in the directory	DONE	PASS
IT_06	Scheduled backup of specified files	None	using [-sf] option to create a cronjob	any files	creating a cronjob and appending it in the crontab	DONE	PASS
IT_07	Scheduled backup of specified directories	None	using [-sd] option to create a cronjob	any files	creating a cronjob and appending it in the crontab	DONE	PASS

UT_Plan

TEST CASE ID	STEP	PRECONDITIONS/DEPENDENCIES	TEST CASE	TEST DATA	EXPECTED RESULTS	RESULTS OBTAINED	STATUS(PASS/FAIL)
UT_01	Rainy case	File not present	Send_file	Filename,sock	Does not send file	DONE	PASS
UT_02	Sunny case	File present	Send_file	Filename,sock	Sends files	DONE	PASS
UT_03	Rainy case	File not present	write_file	Filename,sock	Create files then writes files	DONE	PASS
UT_04	Sunny case	File present	write_file	Filename,sock	Writes files	DONE	PASS