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## WAP to implement stop and wait protocol

```
import socket
```

```
parts = 10
```

```
s = socket.socket()
```

```
s.bind(('localhost', 4444))
```

```
s.listen()
```

```
while True:
```

```
    conn, addr = s.accept()
```

```
    print('Connected by', addr)
```

```
    i=1
```

```
    while i<=parts:
```

```
        data = "part " + str(i)
```

```
        conn.send(data.encode())
```

```
        ack = conn.recv(1024)
```

```
        if not ack:
```

```
            break
```

```
        if ack.decode()=='OK':
```

```
            print("sent",data)
```

```
            i+=1
```

```
        elif ack.decode()=='ERR':
```

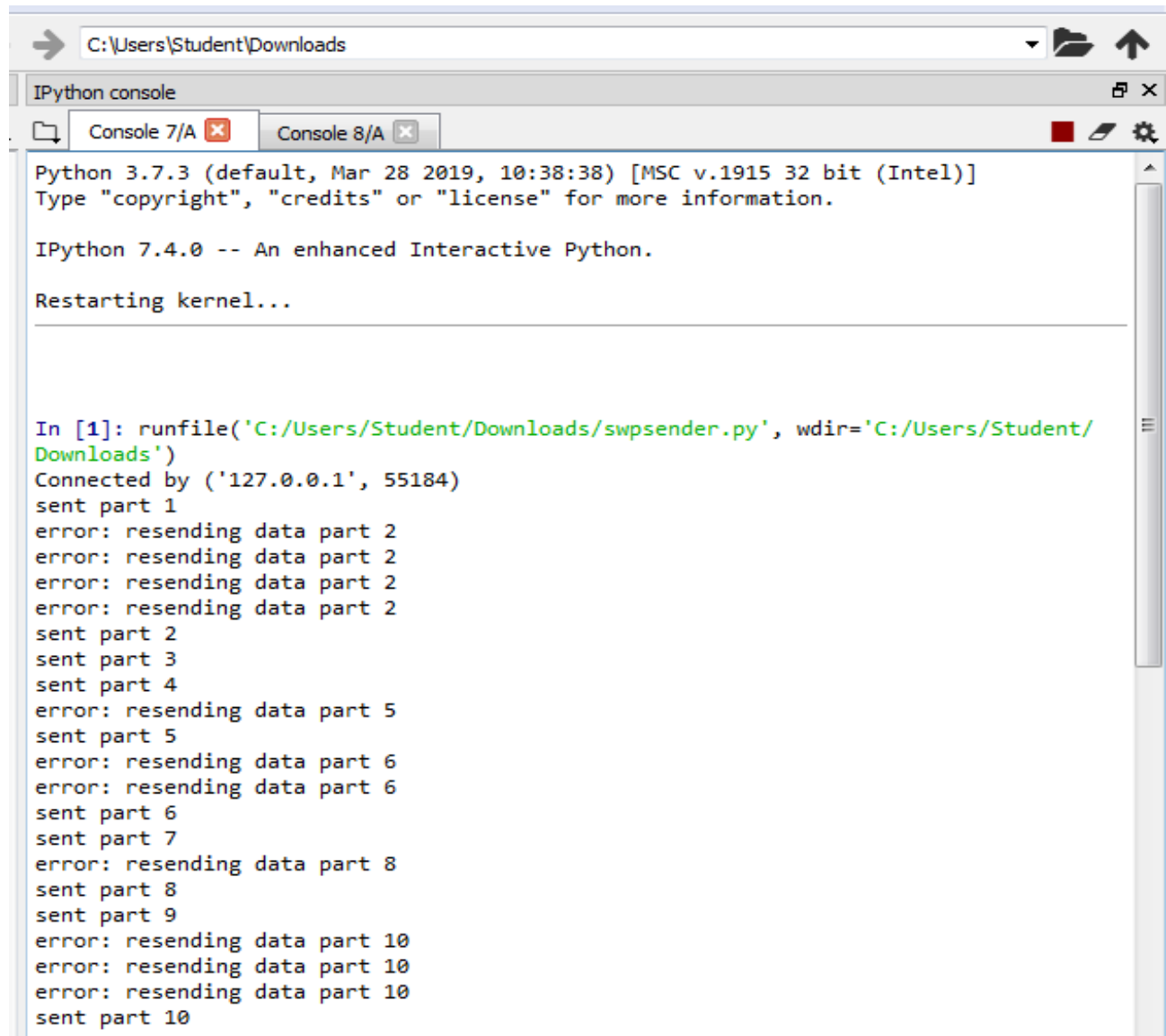
```
            print("error: resending data",data)
```

```
            continue
```

```
conn.send("END".encode())
```

```
conn.close()
```

Output:



The screenshot shows a Windows File Explorer window with the address bar set to `C:\Users\Student\Downloads`. Below it is an IPython console window. The console title bar says "IPython console" and has tabs for "Console 7/A" and "Console 8/A". The console output is as follows:

```
Python 3.7.3 (default, Mar 28 2019, 10:38:38) [MSC v.1915 32 bit (Intel)]
Type "copyright", "credits" or "license" for more information.

IPython 7.4.0 -- An enhanced Interactive Python.

Restarting kernel...

In [1]: runfile('C:/Users/Student/Downloads/swpsender.py', wdir='C:/Users/Student/
Downloads')
Connected by ('127.0.0.1', 55184)
sent part 1
error: resending data part 2
error: resending data part 2
error: resending data part 2
error: resending data part 2
sent part 2
sent part 3
sent part 4
error: resending data part 5
sent part 5
error: resending data part 6
error: resending data part 6
sent part 6
sent part 7
error: resending data part 8
sent part 8
sent part 9
error: resending data part 10
error: resending data part 10
error: resending data part 10
sent part 10
```

```
import socket
```

```
import random
```

```
conn=socket.socket()
conn.connect(('localhost', 4444))
while True:
    err = random.random()
    data = conn.recv(1024)
    if not data:
        break
    d = data.decode()
    if d == 'END':
        break
    if round(err) == 0:
        print(d)
        conn.send("OK".encode())
    else:
        print("error",d,err)
        conn.send("ERR".encode())
conn.close()
```

#### Output:

```
runfile('C:/Users/Student/Downloads/swpreceiver.py', wdir='C:/Users/Student/Downloads')
```

```
part 1
```

```
error part 2 0.5949151763787601
```

```
error part 2 0.7043564437237017
```

```
error part 2 0.9414853486651387
```

```
error part 2 0.5987042050897236
```

part 2

part 3

part 4

error part 5 0.938105757373583

part 5

error part 6 0.6550479164021041

error part 6 0.6077983266937784

part 6

part 7

error part 8 0.7135501599666395

part 8

part 9

error part 10 0.5409377409197007

error part 10 0.6881765589849633

error part 10 0.8498881118331818

part 10