By opening a new file I read its bytes into a new array and randomly changed its random elements. Using the random library in python language gave a random value to a random byte. Then, the new array that has was altered wrote into a new jpg file and ran the "jpeg2bmp" program as modified. Later, I checked whether I get any errors or no. If I got any errors I mentioned which bug it is and how many times it got encountered.

In my first run, bug 7 and bug 8 was encountered. As seen in the screenshot below as well bug 7 was encountered 8 times and bug 8 was encountered 86 times.

```
el962065@eustis3:~/homework2$ chmod +x jpeg2bmp
el962065@eustis3:~/homework2$ ./jpeg2bmp cross.jpg cross.bmp
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 0 times
Bug 2 is encountered 0 times
Bug 3 is encountered 0 times
Bug 4 is encountered 0 times
Bug 5 is encountered 0 times
Bug 6 is encountered 0 times
Bug 7 is encountered 8 times
Bug 8 is encountered 86 times
Bug 9 is encountered 0 times
Bug 10 is encountered 0 times
Bug 11 is encountered 0 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
```

In my second run, I encountered bug 1, bug 6 and bug 9. Bug 1 was encountered 69 times, bug 6 was encountered 70 times and bug 9 was encountered 9385 times.

```
el962065@eustis3:~/homework2$ vim fuzzingTest.py
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 69 times
Bug 2 is encountered 0 times
Bug 3 is encountered 0 times
Bug 4 is encountered 0 times
Bug 5 is encountered 0 times
Bug 6 is encountered 70 times
Bug 7 is encountered 0 times
Bug 8 is encountered 23 times
Bug 9 is encountered 9835 times
Bug 10 is encountered 0 times
Bug 11 is encountered 0 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
el962065@eustis3:~/homework2$
```

In my third run, I found bug 11, which was encountered 16 times.

```
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 22 times
Bug 2 is encountered 0 times
Bug 3 is encountered 0 times
Bug 4 is encountered 0 times
Bug 5 is encountered 0 times
Bug 6 is encountered 45 times
Bug 7 is encountered 0 times
Bug 8 is encountered 0 times
Bug 9 is encountered 9916 times
Bug 10 is encountered 0 times
Bug 11 is encountered 16 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
el962065@eustis3:~/homework2$
```

In my fourth run, I found out bug 3, which was encountered 6 times.

```
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 42 times
Bug 2 is encountered 0 times
Bug 3 is encountered 6 times
Bug 4 is encountered 0 times
Bug 5 is encountered 0 times
Bug 6 is encountered 25 times
Bug 7 is encountered 0 times
Bug 8 is encountered 18 times
Bug 9 is encountered 0 times
Bug 10 is encountered 0 times
Bug 11 is encountered 5 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
```

In my fifth run, I found out bug 10, and it was encountered 3 times.

```
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 4 times
Bug 2 is encountered 0 times
Bug 3 is encountered 0 times
Bug 4 is encountered 0 times
Bug 5 is encountered 0 times
Bug 6 is encountered 81 times
Bug 7 is encountered 0 times
Bug 8 is encountered 0 times
Bug 9 is encountered 0 times
Bug 10 is encountered 3 times
Bug 11 is encountered 10 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
el962065@eustis3:~/homework2$
```
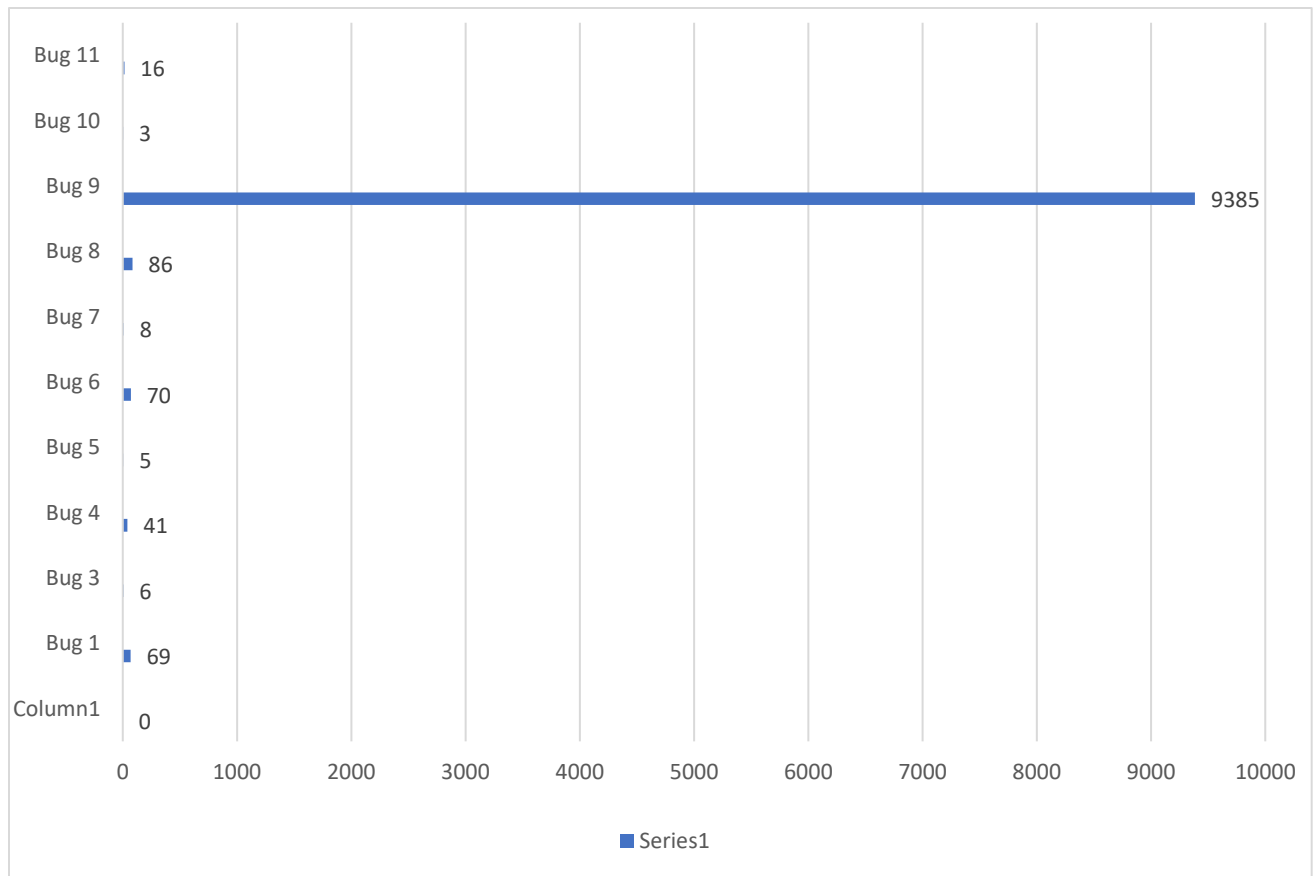
In my fourth run, I found bug 4, which was encountered 41 times.

```
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 0 times
Bug 2 is encountered 0 times
Bug 3 is encountered 0 times
Bug 4 is encountered 41 times
Bug 5 is encountered 0 times
Bug 6 is encountered 0 times
Bug 7 is encountered 0 times
Bug 8 is encountered 33 times
Bug 9 is encountered 0 times
Bug 10 is encountered 0 times
Bug 11 is encountered 2 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
el962065@eustis3:~/homework2$
```

And lastly, in my seventh run, I found bug 5, and it was encountered 5 times.

```
el962065@eustis3:~/homework2$ python3 fuzzingTest.py
Bug 1 is encountered 0 times
Bug 2 is encountered 0 times
Bug 3 is encountered 0 times
Bug 4 is encountered 0 times
Bug 5 is encountered 5 times
Bug 6 is encountered 36 times
Bug 7 is encountered 0 times
Bug 8 is encountered 49 times
Bug 9 is encountered 0 times
Bug 10 is encountered 0 times
Bug 11 is encountered 7 times
Bug 12 is encountered 0 times
Bug 13 is encountered 0 times
el962065@eustis3:~/homework2$
```

Note: while each run, as can be seen in the screenshots as well, some bugs get overwritten.

As can be seen in the statistics bar as well, bug number 9 was the most encountered one, about 9385 times. Whereas bug number 10 was only encountered 3 times.

Screenshot image below shows the "Triggering Bug #x !" for each found bug

As can be seen in the screenshot above all test.jpg files could trigger bug number x.

Note: the file is written in python language. It could be run in Eustis. If you are off campus connect to the UCF server first. Later upload the files to the Eustis machine and "cd" to homework2. By doing "ls" in homework2, you can see the files inside homework2 folder. Type "python3 fuzzingTest" to run the code.