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Github: kchanw CSC415-03 Operating Systems

Assignment 4 – Word Blast

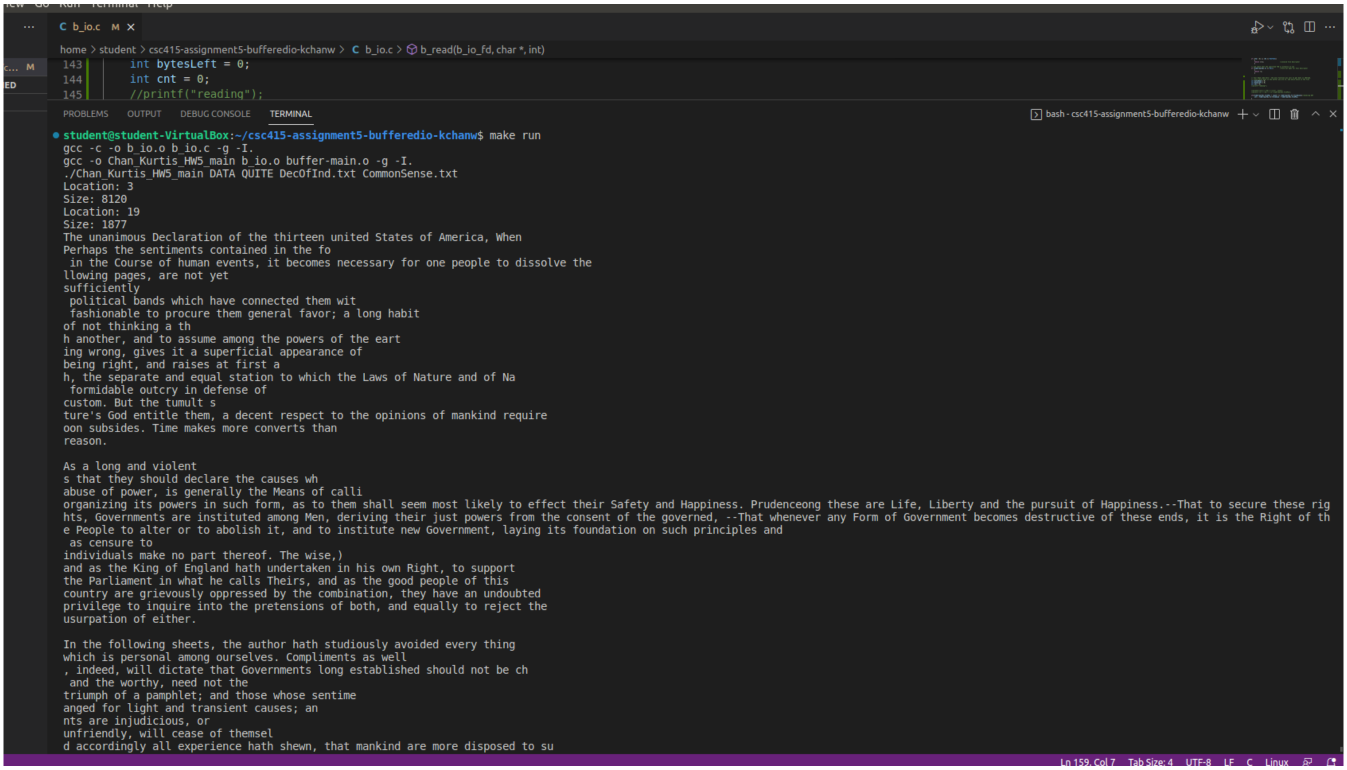
Description: Write three functions, b_open(), b_read(), and b_close(). b_open() returns a file descriptor where it gets file info and allocates memory for the buffer. b_read() reads the file in chunks of size 512 bytes using LBAread() for each block. It reads until the requested number of bytes is read, or until it reaches the end of the file while returning how many bytes have been read. The b_close will free any resources used.

Approach / What I Did: At first for the struct b_fcb, I did not understand why it said to add any other variables needed, but once I got to b_read() I now understood why I needed a way to track where I am in the file, where I am in the buffer, and we need a pointer for our buffer. For b_open() it will return the index given by b_getFCB();. It will return -1 if the FCB array is full and when it fails to get a pointer. It also allocates memory of size B_CHUNK_SIZE which is 512 for that FCB's buffer. This will also initialize the file position, and buffer position to 0 so that it will start at the beginning of the file. I also did the first LBAread() for the FCB so that I won't have to do it in the b_read().

For the b_read() function, I have three different situations when reading. 1, where the count for reading is less than the size of the buffer, then it will just read and memcpy to their buffer. Each memcpy is followed by adding to the buffer position and file position to make sure we are in the right place for both the buffer and file. 2, when multiple blocks are needed like when you have 8 spaces left in your buffer, but the user calls to read 800 bytes. You will need multiple blocks, the current one you are in, one for a full chunk(512 bytes), and one for the remaining. 3, the last one is when you need to go to the next block. Each time to get a new block I needed to call LBAread() and to reset buffPos while updating filePos. At the end of the function, it will return bytesRead which is a variable that kept track of how many bytes you are reading. At the beginning of b_read() there is an if statement to handle when the requested amount of bytes is more than the what you have left in the file to read, so to handle that I trimmed the count to what is left to read and that number is passed instead of the user requested count. Otherwise, just use the user requested count. For close it frees the buffer of the index in the FCB and makes the fi which is the pointer to the file information NULL.

Issues and Resolutions: A big issue I had was trying to make it into a loop for how many blocks I needed for the current call, but ended up confusing myself when doing this. I ended starting again and started with when you do have enough space in the buffer, then I worked on when you needed an extra block, then I worked on when it needed more than that. I do think that in this code it won't handle more than 3 blocks being read since the largest it does is the rest of a block, a full block, and the start of a block. Another thing I got stuck on was using LBAread() and how I only needed to call it when I needed a new block. At first, I kept calling it and incrementing after each b_read() call and memcpy.

Screen shots:

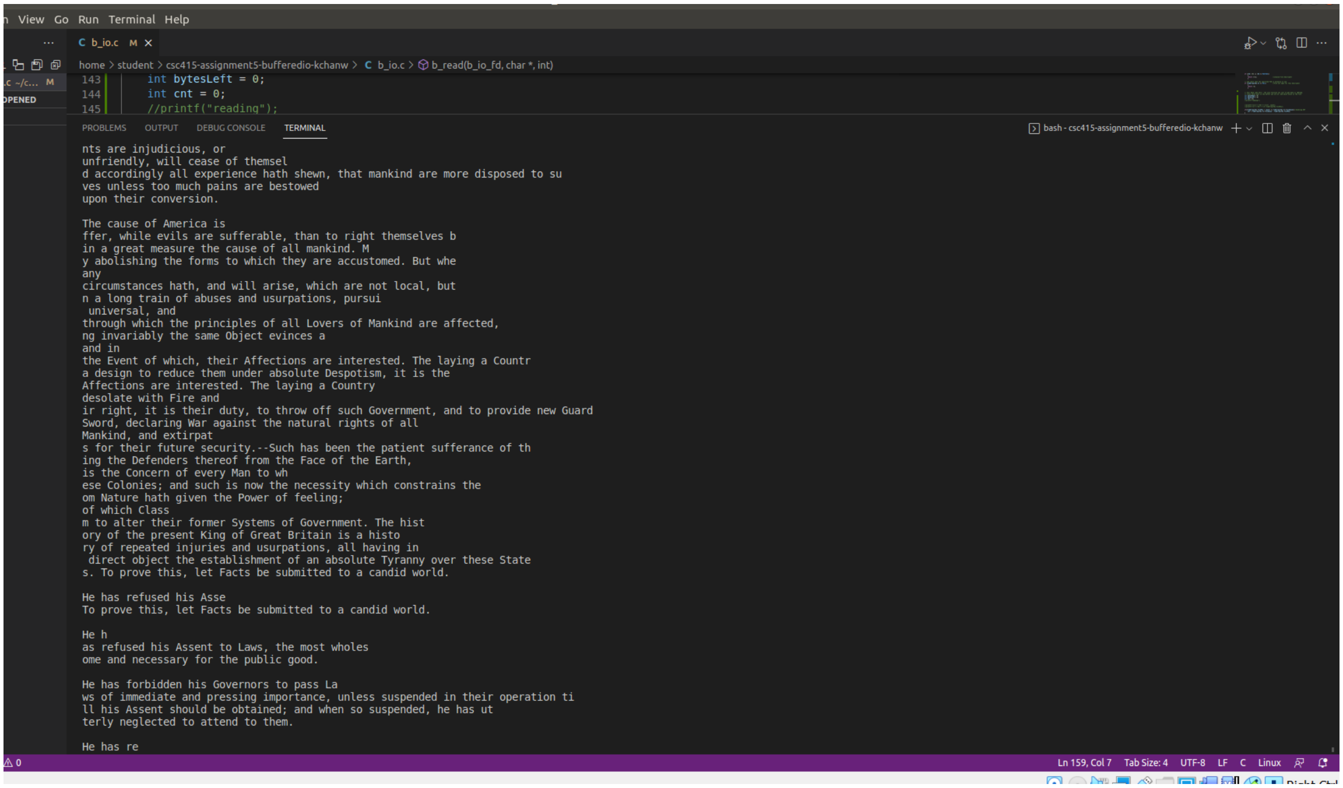

C b_io.c M ×
home > student > csc415-assignment5-bufferedio-kchanw > C b_io.c > b_read(b_io_fd, char *, int)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
bash - csc415-assignment5-bufferedio-kchanw
Ln 159, Col 7 Tab Size: 4 UTF-8 LF C Linux

```c
    int bytesLeft = 0;
    int cnt = 0;
    //printf("reading");
```

```
student@student-VirtualBox:~/csc415-assignment5-bufferedio-kchanw$ make run
gcc -c -o b_io.o b_io.c -g -I.
gcc -o Chan_Kurtis_HW5_main b_io.o buffer-main.o -g -I.
./Chan_Kurtis_HW5_main DATA QUITE DecOfInd.txt CommonSense.txt
Location: 3
Size: 8120
Location: 19
Size: 1877
The unanimous Declaration of the thirteen united States of America, When
Perhaps the sentiments contained in the fo
 in the Course of human events, it becomes necessary for one people to dissolve the
llowing pages, are not yet
sufficiently
 political bands which have connected them wit
 fashionable to procure them general favor; a long habit
of not thinking a th
h another, and to assume among the powers of the eart
ing wrong, gives it a superficial appearance of
being right, and raises at first a
h, the separate and equal station to which the Laws of Nature and of Na
 formidable outcry in defense of
custom. But the tumult s
ture's God entitle them, a decent respect to the opinions of mankind require
oon subsides. Time makes more converts than
reason.

As a long and violent
s that they should declare the causes wh
abuse of power, is generally the Means of calli
organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness. Prudenceong these are Life, Liberty and the pursuit of Happiness.--That to secure these rig
hts, Governments are instituted among Men, deriving their just powers from the consent of the governed, --That whenever any Form of Government becomes destructive of these ends, it is the Right of th
e People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and
 as censure to
individuals make no part thereof. The wise,)
and as the King of England hath undertaken in his own Right, to support
the Parliament in what he calls Theirs, and as the good people of this
country are grievously oppressed by the combination, they have an undoubted
privilege to inquire into the pretensions of both, and equally to reject the
usurpation of either.

In the following sheets, the author hath studiously avoided every thing
which is personal among ourselves. Compliments as well
, indeed, will dictate that Governments long established should not be ch
 and the worthy, need not the
triumph of a pamphlet; and those whose sentime
anged for light and transient causes; an
nts are injudicious, or
unfriendly, will cease of themsel
d accordingly all experience hath shewn, that mankind are more disposed to su
```


View Go Run Terminal Help
C b_io.c M ×
home > student > csc415-assignment5-bufferedio-kchanw > C b_io.c > b_read(b_io_fd, char *, int)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
bash - csc415-assignment5-bufferedio-kchanw
Ln 159, Col 7 Tab Size: 4 UTF-8 LF C Linux

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```
nts are injudicious, or
unfriendly, will cease of themsel
d accordingly all experience hath shewn, that mankind are more disposed to su
ves unless too much pains are bestowed
upon their conversion.

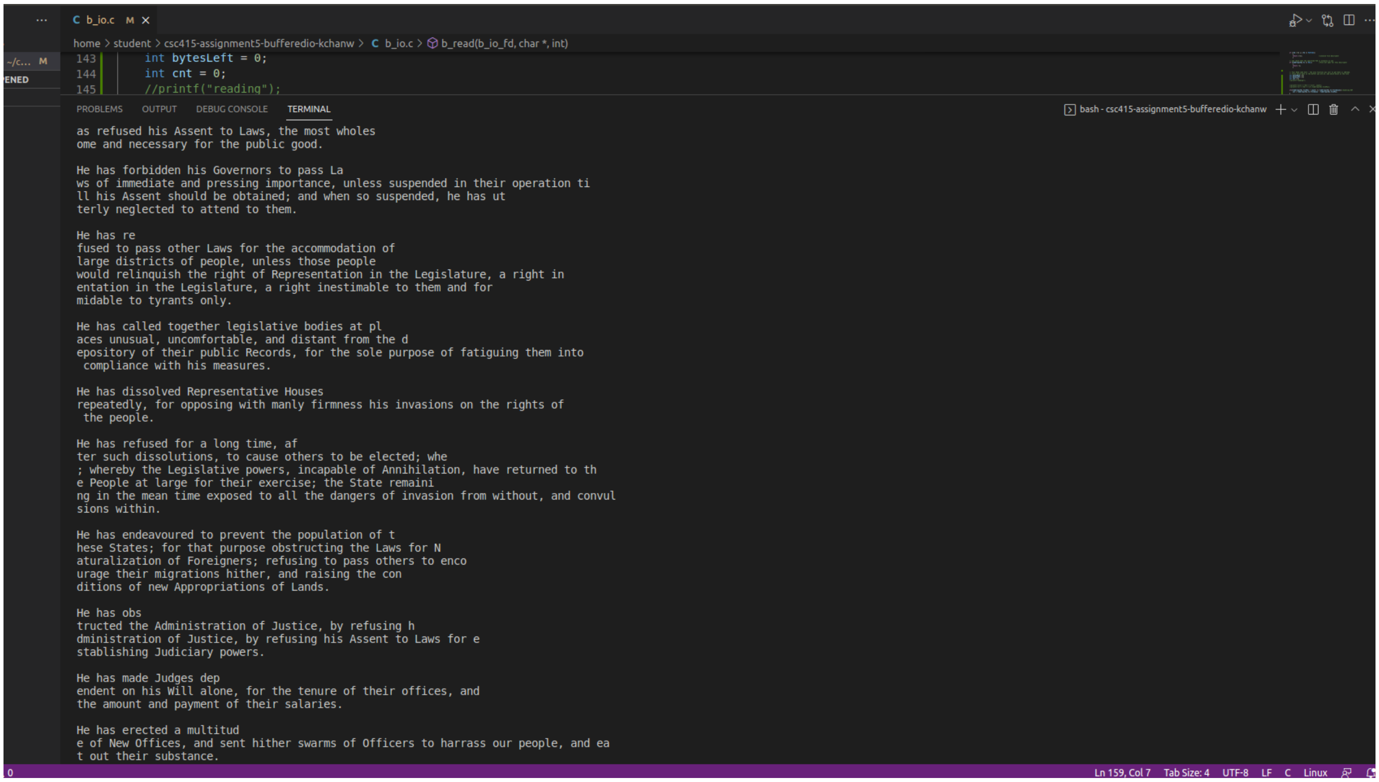
The cause of America is
ffer, while evils are sufferable, than to right themselves b
in a great measure the cause of all mankind. M
y abolishing the forms to which they are accustomed. But whe
any
circumstances hath, and will arise, which are not local, but
n a long train of abuses and usurpations, pursui
 universal, and
through which the principles of all Lovers of Mankind are affected,
ng invariably the same Object evinces a
and in
the Event of which, their Affections are interested. The laying a Countr
a design to reduce them under absolute Despotism, it is the
Affections are interested. The laying a Country
desolate with Fire and
ir right, it is their duty, to throw off such Government, and to provide new Guard
Sword, declaring War against the natural rights of all
Mankind, and extirpat
s for their future security.--Such has been the patient sufferance of th
ing the Defenders thereof from the Face of the Earth,
is the Concern of every Man to wh
ese Colonies; and such is now the necessity which constrains the
om Nature hath given the Power of feeling;
of which Class
m to alter their former Systems of Government. The hist
ory of the present King of Great Britain is a histo
ry of repeated injuries and usurpations, all having in
 direct object the establishment of an absolute Tyranny over these State
s. To prove this, let Facts be submitted to a candid world.

He has refused his Asse
To prove this, let Facts be submitted to a candid world.

He h
as refused his Assent to Laws, the most wholes
ome and necessary for the public good.

He has forbidden his Governors to pass La
ws of immediate and pressing importance, unless suspended in their operation ti
ll his Assent should be obtained; and when so suspended, he has ut
terly neglected to attend to them.

He has re
```


b_io.c M
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terly neglected to attend to them.

He has re
fused to pass other Laws for the accommodation of
large districts of people, unless those people
would relinquish the right of Representation in the Legislature, a right in
entation in the Legislature, a right inestimable to them and for
midable to tyrants only.

He has called together legislative bodies at pl
aces unusual, uncomfortable, and distant from the d
epository of their public Records, for the sole purpose of fatiguing them into
 compliance with his measures.

He has dissolved Representative Houses
repeatedly, for opposing with manly firmness his invasions on the rights of
 the people.

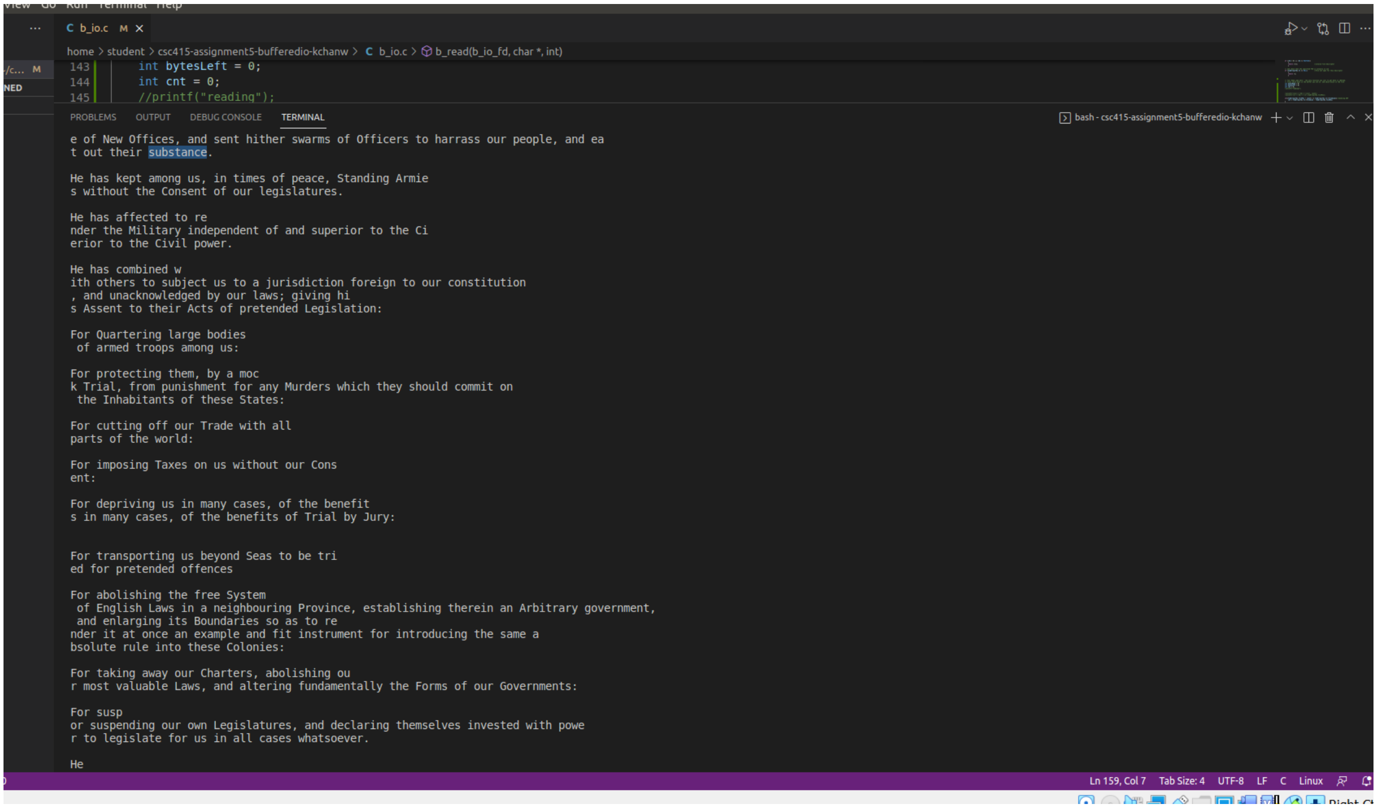
He has refused for a long time, af
ter such dissolutions, to cause others to be elected; whe
; whereby the Legislative powers, incapable of Annihilation, have returned to th
e People at large for their exercise; the State remaini
ng in the mean time exposed to all the dangers of invasion from without, and convul
sions within.

He has endeavoured to prevent the population of t
hese States; for that purpose obstructing the Laws for N
aturalization of Foreigners; refusing to pass others to enco
urage their migrations hither, and raising the con
ditions of new Appropriations of Lands.

He has obs
tructed the Administration of Justice, by refusing h
dministration of Justice, by refusing his Assent to Laws for e
stablishing Judiciary powers.

He has made Judges dep
endent on his Will alone, for the tenure of their offices, and
the amount and payment of their salaries.

He has erected a multitud
e of New Offices, and sent hither swarms of Officers to harrass our people, and ea
t out their substance.
```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```

```
e of New Offices, and sent hither swarms of Officers to harrass our people, and ea
t out their substance.

He has kept among us, in times of peace, Standing Armie
s without the Consent of our legislatures.

He has affected to re
nder the Military independent of and superior to the Ci
erior to the Civil power.

He has combined w
ith others to subject us to a jurisdiction foreign to our constitution
, and unacknowledged by our laws; giving hi
s Assent to their Acts of pretended Legislation:

For Quartering large bodies
 of armed troops among us:

For protecting them, by a moc
k Trial, from punishment for any Murders which they should commit on
 the Inhabitants of these States:

For cutting off our Trade with all
parts of the world:

For imposing Taxes on us without our Cons
ent:

For depriving us in many cases, of the benefit
s in many cases, of the benefits of Trial by Jury:

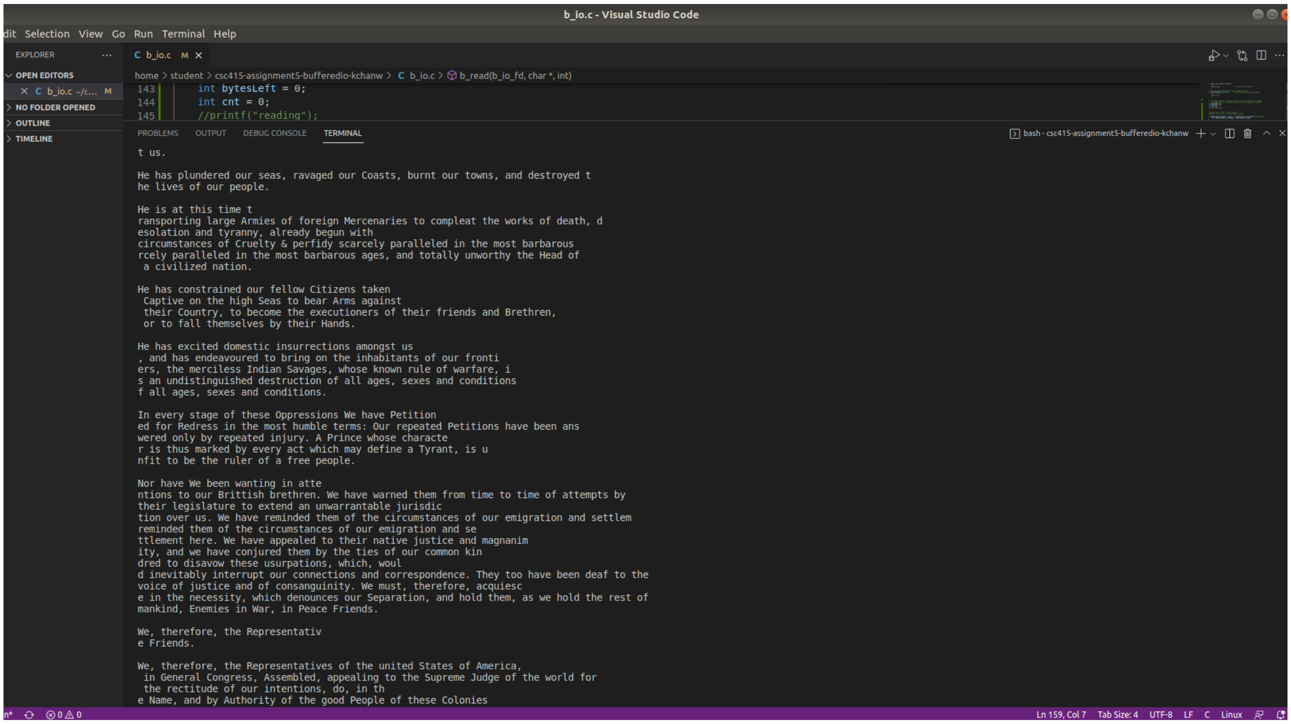

For transporting us beyond Seas to be tri
ed for pretended offences

For abolishing the free System
 of English Laws in a neighbouring Province, establishing therein an Arbitrary government,
 and enlarging its Boundaries so as to re
nder it at once an example and fit instrument for introducing the same a
bsolute rule into these Colonies:

For taking away our Charters, abolishing ou
r most valuable Laws, and altering fundamentally the Forms of our Governments:

For susp
or suspending our own Legislatures, and declaring themselves invested with powe
r to legislate for us in all cases whatsoever.

He
```


b_io.c - Visual Studio Code
dit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS
b_io.c ~/c... M
NO FOLDER OPENED
OUTLINE
TIMELINE
b_io.c M
home > student > csc415-assignment5-bufferedio-kchanw > b_io.c > b_read(b_io_fd, char *, int)
PROBLEMS
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```
t us.

He has plundered our seas, ravaged our Coasts, burnt our towns, and destroyed t
he lives of our people.

He is at this time t
ransporting large Armies of foreign Mercenaries to compleat the works of death, d
esolation and tyranny, already begun with
circumstances of Cruelty & perfidy scarcely paralleled in the most barbarous
rcely paralleled in the most barbarous ages, and totally unworthy the Head of
 a civilized nation.

He has constrained our fellow Citizens taken
 Captive on the high Seas to bear Arms against
 their Country, to become the executioners of their friends and Brethren,
 or to fall themselves by their Hands.

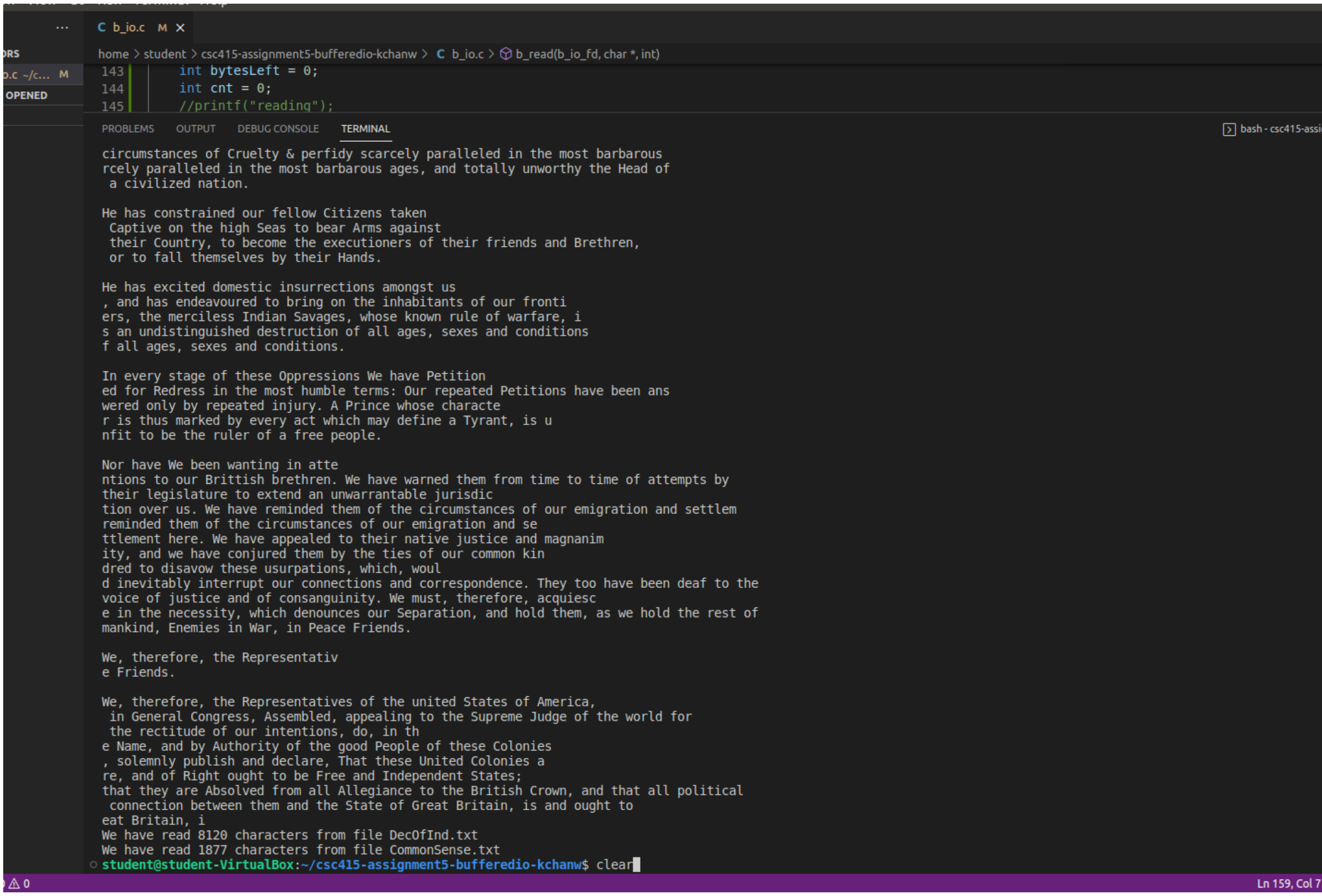
He has excited domestic insurrections amongst us
, and has endeavoured to bring on the inhabitants of our fronti
ers, the merciless Indian Savages, whose known rule of warfare, i
s an undistinguished destruction of all ages, sexes and conditions
f all ages, sexes and conditions.

In every stage of these Oppressions We have Petition
ed for Redress in the most humble terms: Our repeated Petitions have been ans
wered only by repeated injury. A Prince whose characte
r is thus marked by every act which may define a Tyrant, is u
nfit to be the ruler of a free people.

Nor have We been wanting in atte
ntions to our Brittish brethren. We have warned them from time to time of attempts by
their legislature to extend an unwarrantable jurisdic
tion over us. We have reminded them of the circumstances of our emigration and settlem
reminded them of the circumstances of our emigration and se
ttlement here. We have appealed to their native justice and magnanim
ity, and we have conjured them by the ties of our common kin
dred to disavow these usurpations, which, woul
d inevitably interrupt our connections and correspondence. They too have been deaf to the
voice of justice and of consanguinity. We must, therefore, acquiesc
e in the necessity, which denounces our Separation, and hold them, as we hold the rest of
mankind, Enemies in War, in Peace Friends.

We, therefore, the Representativ
e Friends.

We, therefore, the Representatives of the united States of America,
 in General Congress, Assembled, appealing to the Supreme Judge of the world for
 the rectitude of our intentions, do, in th
e Name, and by Authority of the good People of these Colonies
```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Ln 159, Col 7

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We, therefore, the Representatives of the united States of America,
 in General Congress, Assembled, appealing to the Supreme Judge of the world for
 the rectitude of our intentions, do, in th
e Name, and by Authority of the good People of these Colonies
, solemnly publish and declare, That these United Colonies a
re, and of Right ought to be Free and Independent States;
that they are Absolved from all Allegiance to the British Crown, and that all political
 connection between them and the State of Great Britain, is and ought to
eat Britain, i
We have read 8120 characters from file DecOfInd.txt
We have read 1877 characters from file CommonSense.txt
student@student-VirtualBox:~/csc415-assignment5-bufferedio-kchanw$ clear
```