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Date: 10/24/2022
Lab: 6
Lab Problem: File conversion

Program #6: File conversion -- remove control blocking data from backups

Problem Description: You are working on a project where you are given data that has been through a "backup" program which, at times, adds extraneous data. You discover that the data added has a pattern. The pattern is that the corrupt data ALWAYS starts with a CONTROL-C and always ends in a CONTROL-B, and that, at most, four carriage returns are introduced with such an event. You also discover that after the CONTROL-C, there may be more Control-C characters as part of the extraneous data.

Python Code:

```
# Author: Pratyay Kumar
# Date: 10/23/2022
# Lab: 6
# Program Description: File conversion -- removing control blocking data from backups
# Language: Python

import sys

def main():

    # Taking in the input file
    input = open("control-char.txt", 'r')

    # Storing in output file
    output = open('pythonOutput.txt', 'w')

    # Declaring variables to tell precisely if the control is inside ^C and outside ^B
    inC = False
    outC = False

    # Reading the input file
    line = input.read()

    # The for loop is used to convert characters to decimal value and
    # computer to ETX == 3 (^C) in decimal and STX == 2 (^B) in decimal.
    # The character between ETX and STX is not printed
    for i in line:
```

```
    if not line:
        break

    # Setting condition after ^C occurs
    if ord(i) == 3 and inC == False:
        inC = True
        outC = False

    # Getting conditions after ^B occurs
    if ord(i) == 2 and inC == True:
        inC = False
        outC = True

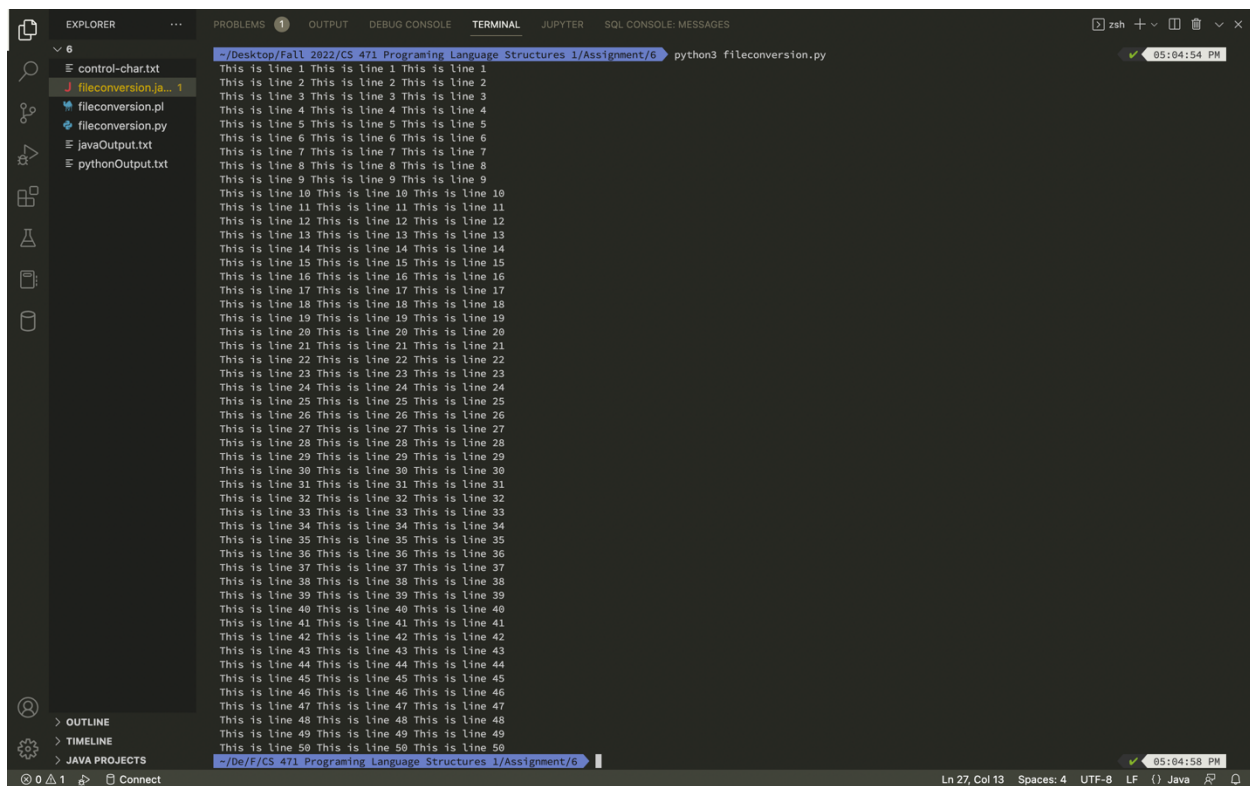
    # Printing the file, except the part in between ^C and ^B
    if inC == False and outC == False:
        # print(i, end = "")
        # output.write(i)
        sys.stdout.write(i)
        output.write(i)

    if outC == True:
        outC = False

input.close()
output.close()

if __name__ == "__main__":
    main()
```

The output of Python Code:



Java Code:

```
/*
# Author: Pratyay Kumar
# Date: 10/23/2022
# Lab: 6
# Program Description: File conversion -- removing control blocking data from backups
# Language: Java
*/
import java.io.*;
import java.util.*;

public class fileconversion {
    public static void main( String[] args ) {

        try {
            // Taking in the input file
            FileReader input = new FileReader ("control-char.txt");
            Scanner s = new Scanner (input);

            // Storing in output file
            FileWriter output = new FileWriter ("javaOutput.txt");

            // Declaring variables to tell precisely if the control is inside ^C and
            outside ^B
```

```

boolean inC = false;
boolean outC = false;

String line;

while ( s.hasNextLine() ) {

    // Reading the input file
    line = s.nextLine();
    int length = line.length();

    /*
    The for loop is used to convert characters to decimal value and
    computer to ETX == 3 (^C) in decimal and STX == 2 (^B) in decimal.
    The character between ETX and STX is not printed
    */
    for ( int i=0; i<length; i++ ) {

        // Setting condition after ^C occurs
        if ( (int)line.charAt(i) == 3 && inC == false ) {
            inC = true;
            outC = false;
        }
        // Getting conditions after ^B occurs
        if ( (int)line.charAt(i) == 2 && inC == true ) {
            inC = false;
            outC = true;
        }
        // Printing the file, except the part in between ^C and ^B
        if ( inC == false && outC == false ) {
            System.out.print(line.charAt(i));
            output.write(line.charAt(i));
        }

        if ( outC == true ) {
            outC = false;
        }

    }

    if (inC == false) {
        System.out.println();
        output.write("\n");
    }

}

input.close();

```

```

        output.close();

    } catch ( IOException e ) {
        e.printStackTrace();
        System.exit(1);
    }
}
}

```

The output of Java code:

```

~/Desktop/Fall 2022/CS 471 Programming Language Structures 1/Assignment/6 /usr/bin/env /Library/Internet\ Plug-Ins/JavaAppletPlugin.plugin/Contents/Home/bin/java -cp
/Users/pratyaykumar/Library/Application\ Support/Code/User/workspaceStorage/099295affc5dbedf4c5842bfd69a4211/redhat.java/jdt_ws/6_744172ca/bin fileconversion
This is line 1 This is line 1 This is line 1
This is line 2 This is line 2 This is line 2
This is line 3 This is line 3 This is line 3
This is line 4 This is line 4 This is line 4
This is line 5 This is line 5 This is line 5
This is line 6 This is line 6 This is line 6
This is line 7 This is line 7 This is line 7
This is line 8 This is line 8 This is line 8
This is line 9 This is line 9 This is line 9
This is line 10 This is line 10 This is line 10
This is line 11 This is line 11 This is line 11
This is line 12 This is line 12 This is line 12
This is line 13 This is line 13 This is line 13
This is line 14 This is line 14 This is line 14
This is line 15 This is line 15 This is line 15
This is line 16 This is line 16 This is line 16
This is line 17 This is line 17 This is line 17
This is line 18 This is line 18 This is line 18
This is line 19 This is line 19 This is line 19
This is line 20 This is line 20 This is line 20
This is line 21 This is line 21 This is line 21
This is line 22 This is line 22 This is line 22
This is line 23 This is line 23 This is line 23
This is line 24 This is line 24 This is line 24
This is line 25 This is line 25 This is line 25
This is line 26 This is line 26 This is line 26
This is line 27 This is line 27 This is line 27
This is line 28 This is line 28 This is line 28
This is line 29 This is line 29 This is line 29
This is line 30 This is line 30 This is line 30
This is line 31 This is line 31 This is line 31
This is line 32 This is line 32 This is line 32
This is line 33 This is line 33 This is line 33
This is line 34 This is line 34 This is line 34
This is line 35 This is line 35 This is line 35
This is line 36 This is line 36 This is line 36
This is line 37 This is line 37 This is line 37
This is line 38 This is line 38 This is line 38
This is line 39 This is line 39 This is line 39
This is line 40 This is line 40 This is line 40
This is line 41 This is line 41 This is line 41
This is line 42 This is line 42 This is line 42
This is line 43 This is line 43 This is line 43
This is line 44 This is line 44 This is line 44
This is line 45 This is line 45 This is line 45
This is line 46 This is line 46 This is line 46
This is line 47 This is line 47 This is line 47
This is line 48 This is line 48 This is line 48
This is line 49 This is line 49 This is line 49
This is line 50 This is line 50 This is line 50

```

Perl Code:

```

# Author: Pratyay Kumar
# Date: 10/23/2022
# Lab: 6
# Program Description: File conversion -- removing control blocking data from backups
# Language: Perl
# !/usr/bin/perl

use strict;
use warnings;

# Taking in the input file

```

```

my $input = 'control-char.txt';
open(FH, '<', $input) or die $!;

# Storing in output file
open (FW, '>', "perlOutput.txt") or die $!;

# Declaring variables to tell precisely if the control is inside ^C and outside ^B
my $inC = 1; # False
my $outC = 1; # False

# Reading the input file
my $line = <FH>;

# The for loop is used to convert characters to decimal value and
# computer to ETX == 3 (^C) in decimal and STX == 2 (^B) in decimal.
# The character between ETX and STX is not printed
while ( $line ) {

    my $str = $line;
    # using split() function
    my @spl = split('', $str);

    # displaying result using foreach loop
    foreach my $i (@spl) {
        if (ord($i) == 3 and $inC == 1) {
            $inC = 0;
            $outC = 1;
        }
        # Getting conditions after ^B occurs
        if (ord($i) == 2 and $inC == 0) {
            $inC = 1;
            $outC = 0;
        }
        # Printing the file, except the part in between ^C and ^B
        if ($inC == 1 and $outC == 1) {
            print $i;
            $a = $i;
            print FW $a;
        }
        if ($outC == 0) {
            $outC = 1;
        }
    }

    $line = <FH>;
}

```

```
close(FW) or die $!;
close (FH) or die $!;
```

Output of Perl Code:

```
~/De/CS 471 Programming Language Structures 1/Assignment/6 perl fileconversion.pl
This is line 1 This is line 1 This is line 1
This is line 2 This is line 2 This is line 2
This is line 3 This is line 3 This is line 3
This is line 4 This is line 4 This is line 4
This is line 5 This is line 5 This is line 5
This is line 6 This is line 6 This is line 6
This is line 7 This is line 7 This is line 7
This is line 8 This is line 8 This is line 8
This is line 9 This is line 9 This is line 9
This is line 10 This is line 10 This is line 10
This is line 11 This is line 11 This is line 11
This is line 12 This is line 12 This is line 12
This is line 13 This is line 13 This is line 13
This is line 14 This is line 14 This is line 14
This is line 15 This is line 15 This is line 15
This is line 16 This is line 16 This is line 16
This is line 17 This is line 17 This is line 17
This is line 18 This is line 18 This is line 18
This is line 19 This is line 19 This is line 19
This is line 20 This is line 20 This is line 20
This is line 21 This is line 21 This is line 21
This is line 22 This is line 22 This is line 22
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This is line 24 This is line 24 This is line 24
This is line 25 This is line 25 This is line 25
This is line 26 This is line 26 This is line 26
This is line 27 This is line 27 This is line 27
This is line 28 This is line 28 This is line 28
This is line 29 This is line 29 This is line 29
This is line 30 This is line 30 This is line 30
This is line 31 This is line 31 This is line 31
This is line 32 This is line 32 This is line 32
This is line 33 This is line 33 This is line 33
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This is line 38 This is line 38 This is line 38
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This is line 43 This is line 43 This is line 43
This is line 44 This is line 44 This is line 44
This is line 45 This is line 45 This is line 45
This is line 46 This is line 46 This is line 46
This is line 47 This is line 47 This is line 47
This is line 48 This is line 48 This is line 48
This is line 49 This is line 49 This is line 49
This is line 50 This is line 50 This is line 50
```

Conclusion of the file generated by the Python, Java, and Perl code: The file size for the output file generated is 2KB for Java, 2KB for Python, and 3KB for Perl. You can see the screenshot below.

control-char.txt Info	javaOutput.txt Info	pythonOutput.txt Info	perlOutput.txt Info
control-char.txt 3 KB Modified: Yesterday, 6:02 PM Add Tags...	javaOutput.txt 2 KB Modified: Today, 5:04 PM Add Tags...	pythonOutput.txt 2 KB Modified: Today, 5:04 PM Add Tags...	perlOutput.txt 3 KB Modified: Today, 5:05 PM Add Tags...
General: Kind: Plain Text Document Size: 2,600 bytes (4 KB on disk) Where: Macintosh HD • Users • pratyaykumar • Desktop • Fall 2022 • CS 471 Programming Language Structures 1 • Assignment • 6 Created: October 23, 2022 at 12:56 PM Modified: October 23, 2022 at 6:02 PM <input type="checkbox"/> Stationery pad <input type="checkbox"/> Locked	General: Kind: Plain Text Document Size: 2,466 bytes (4 KB on disk) Where: Macintosh HD • Users • pratyaykumar • Desktop • Fall 2022 • CS 471 Programming Language Structures 1 • Assignment • 6 Created: October 24, 2022 at 5:04 PM Modified: October 24, 2022 at 5:04 PM <input type="checkbox"/> Stationery pad <input type="checkbox"/> Locked	General: Kind: Plain Text Document Size: 2,466 bytes (4 KB on disk) Where: Macintosh HD • Users • pratyaykumar • Desktop • Fall 2022 • CS 471 Programming Language Structures 1 • Assignment • 6 Created: October 24, 2022 at 4:24 PM Modified: October 24, 2022 at 5:04 PM <input type="checkbox"/> Stationery pad <input type="checkbox"/> Locked	General: Kind: Plain Text Document Size: 2,516 bytes (4 KB on disk) Where: Macintosh HD • Users • pratyaykumar • Desktop • Fall 2022 • CS 471 Programming Language Structures 1 • Assignment • 6 Created: October 24, 2022 at 5:05 PM Modified: October 24, 2022 at 5:05 PM <input type="checkbox"/> Stationery pad <input type="checkbox"/> Locked
> More Info:	> More Info:	> More Info:	> More Info:
> Name & Extension:	> Name & Extension:	> Name & Extension:	> Name & Extension:
> Comments:	> Comments:	> Comments:	> Comments:
> Open with:	> Open with:	> Open with:	> Open with:
> Preview:	> Preview:	> Preview:	> Preview:
> Sharing & Permissions:	> Sharing & Permissions:	> Sharing & Permissions:	> Sharing & Permissions:

```
pkumar@kaiju:~/Downloads/6> wc outputPython.txt
  50  600 2516 outputPython.txt
pkumar@kaiju:~/Downloads/6> wc outputJava.txt
  50  600 2466 outputJava.txt
pkumar@kaiju:~/Downloads/6> wc outputPerl.txt
  50  600 2516 outputPerl.txt
pkumar@kaiju:~/Downloads/6> █
```

The above screenshot shows the word counts of the output file generated by the codes.