PA 4: File conversion -- remove control blocking data from backups

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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: (pa4Python.py)

```python
# Author: Indronil Bhattacharjee
# Date: 22/03/2023
# Assignment: 4
# 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
    inChar = False
    outChar = False
    # Reading the input file
    line = input.read()

        # The for loop is used to convert characters to decimal value and
        # compater 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 inChar == False:
            inChar = True
            outChar = False
        # Getting conditions after ^B occurs
        if ord(i) == 2 and inChar == True:
            inChar = False
            outChar = True
```

```python
        # Printing the file, except the part in between ^C and ^B
        if inChar == False and outChar == False:
            print(i, end = "")
            output.write(i)

        if outChar == True:
            outChar = False

    input.close()
    output.close()

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

Python output:

```
PS C:\Users\ICT\Downloads\CS 471\PA4_PLS_Indronil_Bhattacharjee> python pa4python.py
 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 A
 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 A
 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 B
 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 B
 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 B
 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  C
 This is line 50 This is line 50 This is line 50 D
```

Java code: (pa4Java.java)

```java
/*
# Author: Indronil Bhattacharjee
# Date: 22/03/2023
# Assignment: 4
# Program Description: File conversion -- removing control blocking data from
backups
# Language: Java
*/

import java.io.*;
import java.util.*;
public class pa4Java {
  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 inChar = false;
        boolean outChar = 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
            compare 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 && inChar == false){
                    inChar = true;
                    outChar = false;
                }
                // Getting conditions after ^B occurs
                if ((int)line.charAt(i) == 2 && inChar == true){
                    inChar = false;
                    outChar = true;
                }
                // Printing the file, except the part in between ^C and ^B
                if (inChar == false && outChar == false){
                    System.out.print(line.charAt(i));
```

```
                    output.write(line.charAt(i));
                }
                if (outChar == true){
                    outChar = false;
                }
            }

            if (inChar == false){
                System.out.println();
                output.write("\n");
            }
        }
    input.close();
    output.close();
    s.close();
    } catch (IOException e) {
        e.printStackTrace();
        System.exit(1);
    }
  }
}
```

Java output:

Perl code: (pa4Perl.pl)

```perl
# Author: Indronil Bhattacharjee
# Date: 22/03/2023
# Assignment: 4
# Program Description: File conversion -- removing control blocking data from
backups
# Language: 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 $inChar = 1; # False
my $outChar = 1; # False
# Reading the input file
my $line = <FH>;
# The for loop is used to convert characters to decimal value and
# compater 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 $inChar == 1) {
            $inChar = 0;
            $outChar = 1;
        }
        # Getting conditions after ^B occurs
        if (ord($i) == 2 and $inChar == 0) {
            $inChar = 1;
            $outChar = 0;
        }
        # Printing the file, except the part in between ^C and ^B
        if ($inChar == 1 and $outChar == 1) {
            print $i;
            $a = $i;
            print FW $a;
        }
        if ($outChar == 0) {
            $outChar = 1;
        }
```

```
    }
    $line = <FH>;
}
close(FW) or die $!;
```

Perl output:

```
PS C:\Users\ICT\Downloads\CS 471\PA4_PLS_Indronil_Bhattacharjee> perl pa4Perl.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 A
 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 A
 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
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 This is line 14 This is line 14 This is line 14
 This is line 15 This  is line 15 This is line 15 B
 This is line 16 This is line 16 This is line 16
 This is line 17 This is line 17 This is line 17
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 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  C
 This is line 50 This is line 50 This is line 50 D
```