bc version 1.06

run ./configure

For this assignment, I found that bc is not a very reliable utility. Before I even began complex testing, I was able to break bc. The way I was able to break it was very simple. First I found a .bc file from online that defined some bc functions. I copied this into my own bc file and then simply tried to run bc with that file. At that point bc failed to output any kind of error message even though it would not respond to any of the commands I inputed. Now granted, I may have done something wrong when copying the code into my file; however, I don't believe a good way of handling this is not outputting any information. Bc wouldn't even respond to the "quit" command, so I had to completely close the terminal and restart it. I feel like a solid utility would have at least printed out something and then aborted. C at least prints out the cryptic "segmentation fault" when something goes wrong, bc on the other hand, does nothing. And also consider the fact that I was simply trying to run bc with a .bc file, this is basic functionality that bc should expect to get some mistakes from and should therefore have error handling code for this.

As a sanity check, I took one function from that same file, and put it into a separate .bc file. I then ran bc with that file and was able to use the function defined in the file.

```
define screen_printchar_(c) {
  if(c==0)print" "
  if(c==1)print"|"
  if(c==2)print"-"
  if(c==3)print"+"
  if(c==4)print"."
  if(c==5)print"!"
  if(c==6)print"o"
  if(c==7)print"*"
  if(c==8)print","
  if(c==9)print"_"
  if(c==A)print"~"
```

```
   if(c==B)print"$"
   if(c==C)print";"
   if(c==D)print":"
   if(c==E)print"="
   if(c==F)print"#"
   if(0>c||c>F)print "?"
   return c;
}
```

This shows that some sort of error occurs in one of the other functions, and bc fails to handle it in any way.

To further show that bc is not a solid utility, I defined the screen_printchar_ function in another .bc file and then fuzzed 10 bits in it. Bc gave a few parse errors and then began to run fine. I then defined the function in yet another .bc file and this time fuzzed 150 bits. This caused bc to break again. It gave the parse error warnings, but after that it would not accept any more input and I had to close the the terminal and restart it.