1. KISS (Keep it Simple, Stupid):

   The code in the bad file makes simple operations like addition, subtraction and multiplication more complex than they need to be. For example, addition can be done using x + y, but the bad version uses a loop to manually add the numbers. Subtraction is also made too complex by adding the if statements of if x > y and x == y because in those cases a simple subtraction function would suffice. The multiplication operation unnecessarily uses a loop instead of the * operator.

2. DRY (Don't Repeat Yourself):

   The code repeats similar logic, especially in the if-else block for different operations. Each branch handles both the calculation and printing, leading to redundancy. In our good version, you see that we have left printing at the end where we can do it once, instead of doing it 4 times in the bad version. We have also added the printing of calculation finished, which adds an unnecessary output after every calculation.

3. Single Responsibility Principle:

   The calculator() function does everything: It takes user input, performs calculations, and handles printing. Every operation is lumped into the same function, making it harder to modify or test individual parts of the program. Therefore, in the good version of our calculator, we have separated the calculations in 4 different functions of add, subtract, multiply and divide so we can test each function to see if it works.

```
Last login: Tue Sep 24 18:12:42 on ttys000
[(base) devamin@Devs-MacBook-Pro-3 ~ % cd Documents
[(base) devamin@Devs-MacBook-Pro-3 Documents % cd Github
[(base) devamin@Devs-MacBook-Pro-3 Github % ls
BankAccount2            HorribleCodeActivity    sandwichmaker
[(base) devamin@Devs-MacBook-Pro-3 Github % cd HorribleCodeActivity
[(base) devamin@Devs-MacBook-Pro-3 HorribleCodeActivity % git add .
[(base) devamin@Devs-MacBook-Pro-3 HorribleCodeActivity % git commit -m "Good calculatpr"
[main (root-commit) c6bd305] Good calculatpr
 7 files changed, 81 insertions(+)
 create mode 100644 .idea/.gitignore
 create mode 100644 .idea/HorribleCodeActivity.iml
 create mode 100644 .idea/inspectionProfiles/profiles_settings.xml
 create mode 100644 .idea/misc.xml
 create mode 100644 .idea/modules.xml
 create mode 100644 .idea/vcs.xml
 create mode 100644 calculator_good.py
(base) devamin@Devs-MacBook-Pro-3 HorribleCodeActivity % git push
[Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 8 threads
Compressing objects: 100% (10/10), done.
Writing objects: 100% (11/11), 1.75 KiB | 1.75 MiB/s, done.
Total 11 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/damin7/HorribleCodeActivity.git
 * [new branch]      main -> main
(base) devamin@Devs-MacBook-Pro-3 HorribleCodeActivity % 
```

```
[(base) abhiramabhi@Abhirams-MacBook-Pro GitHub % cd HorribleCodeActivity
[(base) abhiramabhi@Abhirams-MacBook-Pro HorribleCodeActivity % ls
 calculator_bad.py        calculator_good.py
[(base) abhiramabhi@Abhirams-MacBook-Pro HorribleCodeActivity % git add .
[(base) abhiramabhi@Abhirams-MacBook-Pro HorribleCodeActivity % git commit -m "added bad"
 [main 3760380] added bad
  1 file changed, 47 insertions(+)
  create mode 100644 calculator_bad.py
 (base) abhiramabhi@Abhirams-MacBook-Pro HorribleCodeActivity % git push
[Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 655 bytes | 655.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/damin7/HorribleCodeActivity.git
   c6bd305..3760380  main -> main
 (base) abhiramabhi@Abhirams-MacBook-Pro HorribleCodeActivity % 
```