1. Sally is a proctor at University and she needs to write a python program to filter bad language. The program will work as follows: You will ask the user to provide the bad word she wants to filter, and for the number of statements she wants to check (let the number be N). Then you will keep asking for inputs for a total of N times. If the bad word is entered, display “You cannot use this word”, otherwise display “Valid statement”.

[CO3, CO4]

[12 marks]

**Sample Input 1:**

Enter bad word: Dog

Enter number of statements: 3

Enter Statement: Cat

Enter Statement: Dogs

Enter statement: Pig

**Sample Output 1:**

Valid statement

Valid statement

Valid statement

**Explanation 1:**

The first input given is “Dog”, which is the bad word to be compared with. Then, 3 is given as the second input which signifies how many statements to take as input afterwards.The first statement given was “Cat”, which is not the same as “Dog”. Similarly, none of the statements given were “Dog”, so all of them printed “Valid Statement”.

**Sample Input 2:**

Enter bad word: Crap

Enter number of statements: 2

Enter Statement: Crap

Enter Statement: Dog

**Sample Output 2:**

You cannot use this word

Valid statement

**Explanation 2:**

The first input given is “Crap”, which is the bad word to be compared with. Then, 2 is given as the second input which signifies how many statements to take as input afterwards.The first statement given was “Crap”, which is the same as “Crap”, therefore “You cannot use this word” was printed. The “Dog” was given as input, which is not the same as “Crap”, therefore “Valid Statement” was printed.

1. Write a program that will round a number to the nearest integer. You are not allowed to use int() to directly typecast the number. You are not required to take user input. The number will be given as either an integer or a float. **[Hint: worry less about the data type of the output, focus more on the logic]**

[CO3]

[8 marks]

**Given input 1:**

5.2

**Sample Output 1:**

5.0

**Explanation 1:**

5.2 is closer to 5 than it is to 6, therefore it is rounded to 5.

**Given input 2:**

5.6

**Sample Output 2:**

6.0

**Explanation 2:**

5.6 is closer to 6 than it is to 5, therefore it is rounded to 6.

**Given input 3:**

5.5

**Sample Output 3:**

6.0

**Explanation 3:**

When the number is equidistant from both the previous and next integer, it is rounded up. Therefore, 5.5 is rounded to 6.

**Bonus Question**  **[ 3 marks and no partial marking ]:**

Find the error in the following code. Mention the line number, and explain why the code won’t run. Use a tracing table to prove your explanation.

| 1 | x = 0 |
| --- | --- |
| 2 | y = 5 |
| 3 | if x < y: |
| 4 | x = x + 1 |
| 5 | sum = sum + x |
| 6 | print(y) |

[CO3, CO4]