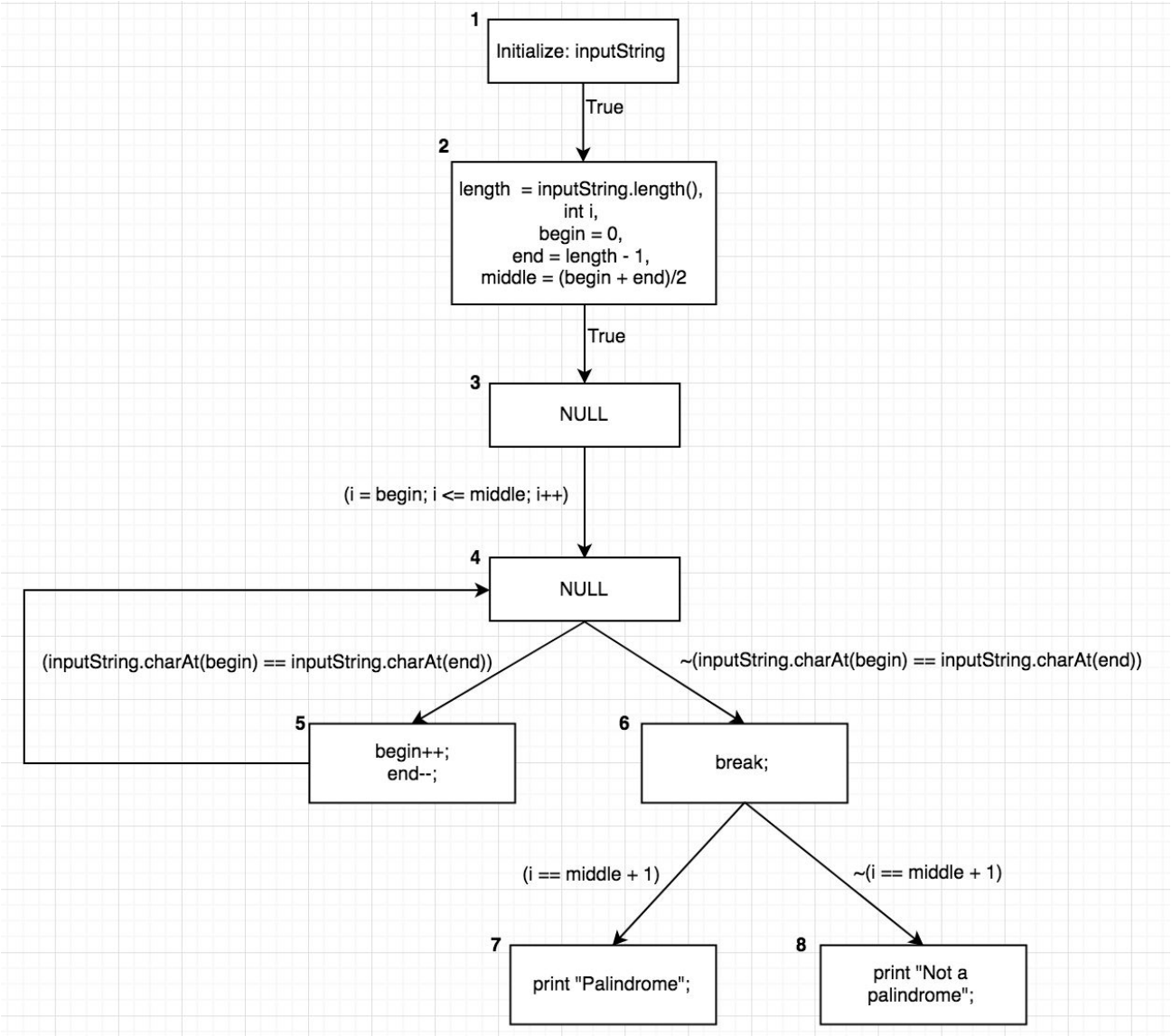
Assignment 4 - Control Flow Graphs

Team 16

```
Void isPalindrome(String inputString){
int length  = inputString.length();
        int i, begin, end, middle;
        begin  = 0;
        end = length - 1;
        middle = (begin + end)/2;

    for (i = begin; i <= middle; i++) {
          if (inputString.charAt(begin) == inputString.charAt(end)) {
                begin++;
                end--;
          }
      else {
        break;
          }
     }
    if (i == middle + 1) {
          print "Palindrome";
          }
    else {
          print "Not a palindrome";
          }
}
```

1. Identify the basic blocks and draw the flow graph.



2. Identify as many independent paths as possible with a minimum of three paths.

A = 1-2-3-4-5-(4)-6-7

B = 1-2-3-4-5-(4)-6-8

C = 1-2-3-4-6-7

D = 1-2-3-4-6-8

(Professor did not go through independent path or how to determine it in the lecture, found explanations online: http://testerstories.com/2014/06/path-testing-independent-paths/ & https://www.tutorialspoint.com/software_testing_dictionary/basis_path_testing.htm)

3. Of these paths, classify the paths as simple path and loop-free path.

Simple Path: A, B, C, D

Loop-free path: C, D

4. Identify the definition, P-uses and C-uses. You could use the following format.

Statements	Def	C-Use	P-Use
int length = inputString.length();	length	inputString.length()	
int i, begin, end, middle;	i,begin,end,middle		

begin = 0;
end = length - 1;
middle = (begin + end)/2;
	begin,end,middle	length,begin, end	

for (i = begin; i <= middle; i++)	i	begin	i,middle
if (inputString.charAt(begin) == inputString.charAt(e nd))			Begin, end
begin++; end--;		Begin, end	
if (i == middle + 1) {			I, middle

5. Identify the def-use associations of variables like bottom, top and mid.

InputString:

(inputString, 1, 2), (inputString, 1, (4,t)), (inputString, 1, (4,f))

Begin:

(begin, 2, 3), (begin, 2, (4,t)), (begin, 2, (4,f)), (begin, 2, 5)

Middle:

(middle, 2, 3), (middle, 2, (6,t)), (middle, 2, (6,f))

End:

(end, 2, (4,t)), (end, 2, (4,f)), (end, 2, 5)

I:
(i, 2, (3,t)), (i, 2, (3,f)), (i, 2, (6,t)), (i, 2, (6,f))