Lab 1: White-Box Testing

Assignment 2: Look at the program below. How many feasible paths are there for this program? Define a set of test cases that gives you 100% coverage of all the feasible paths.

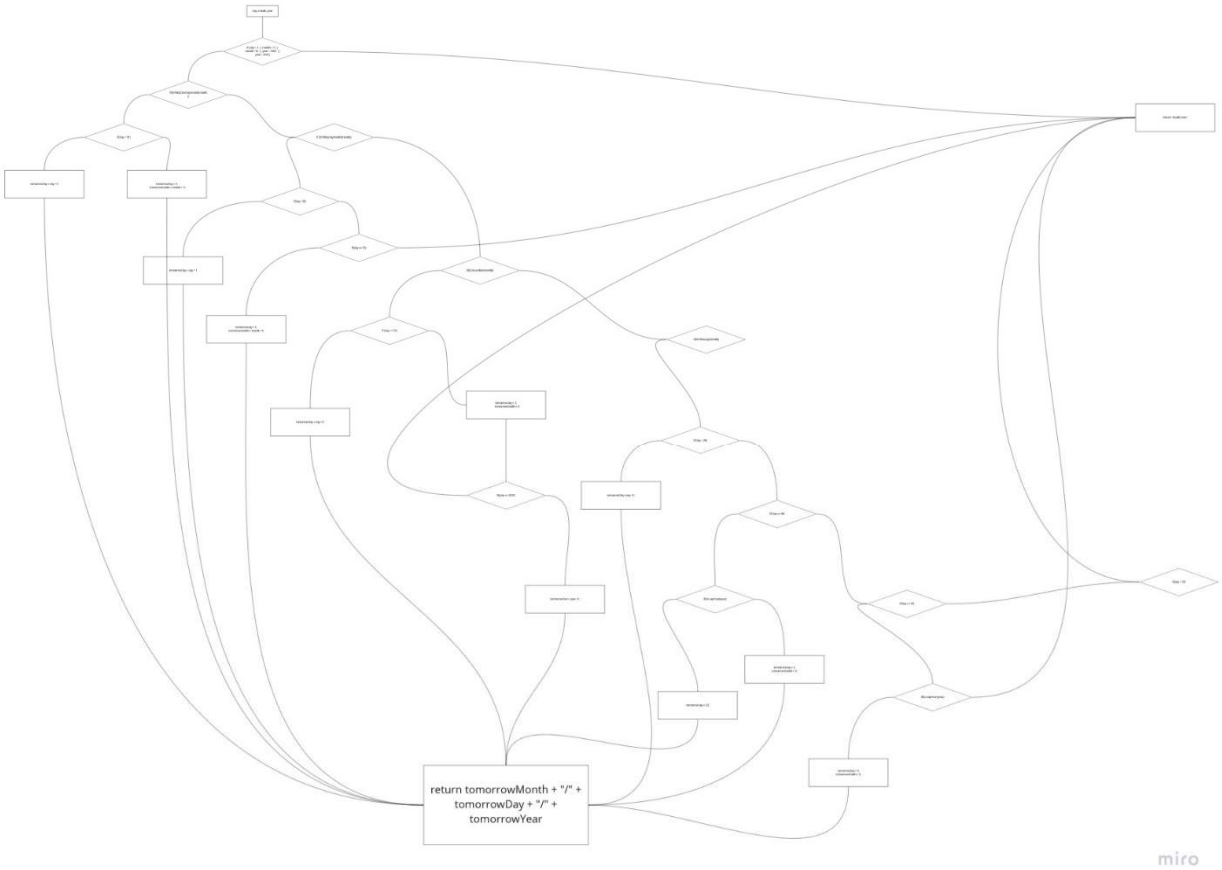
```
input(score);
if score < 45 then
print ('fail');
else
print ('pass?);
if score > 80 then
print (' with distinction');
End
```

Answer:

Score	< 45	> 80
No feasible	T	T
Feasible	T	F
Feasible	F	T
Feasible	F	F

In total : 3 feasible paths.

Assignment 4:
a) Make a **flow graph** of the **run** method in the NextDate class



b) Calculate the McCabe's Cyclomatic Complexity measure.

McCabe Cyclomatic measure = #(decisions) +1 *(or #(edges) - #(nodes)+2)*
=> 16 +1 = 17

Assignment 5: Calculate the minimum number of test cases if the goal is:
a) 100% Statement coverage: 10
b) 100% Branch coverage: 17
c) 100% Predicate coverage: 17 + 10 = 27

Assignment 6: Based on the flow graph, prepare a minimum set of test cases for each coverage type. You may re-use test cases for the different coverage types, but have separate sets of test cases for each coverage type so that you can compare the coverage types, e.g. no of test cases, bugs found etc.

Statement coverage (10 paths):
1-2-5-7
1-2-5-6
1-2-4-9-11
1-2-4-9-10-13
1-2-4-8-15-17
1-2-4-8-15-16-18
1-2-4-8-14-21-23
1-2-4-8-14-21-22-25-27
1-2-4-8-14-21-22-25-26
1-2-4-8-14-21-22-24-29-31

Branch coverage (17 paths):

1-3
1-2-5-6
1-2-5-7
1-2-4-9-11
1-2-4-9-10-12
1-2-4-9-10-13
1-2-4-8-15-16-18
1-2-4-8-15-16-19
1-2-4-8-15-17
1-2-4-8-14-21-23
1-2-4-8-14-21-22-25-26
1-2-4-8-14-21-22-25-27
1-2-4-8-14-21-22-24-29-31
1-2-4-8-14-21-22-24-29-30
1-2-4-8-14-21-22-24-28-33
1-2-4-8-14-21-22-24-28-32
1-2-4-8-14-20

Predicate coverage (17+11):
1-3
1-2-5-6
1-2-5-7
1-2-4-9-11
1-2-4-9-10-12
1-2-4-9-10-13
1-2-4-8-15-16-18
1-2-4-8-15-16-19
1-2-4-8-15-17
1-2-4-8-14-21-23
1-2-4-8-14-21-22-25-26
1-2-4-8-14-21-22-25-27
1-2-4-8-14-21-22-24-29-31
1-2-4-8-14-21-22-24-29-30
1-2-4-8-14-21-22-24-28-33
1-2-4-8-14-21-22-24-28-32
1-2-4-8-14-20