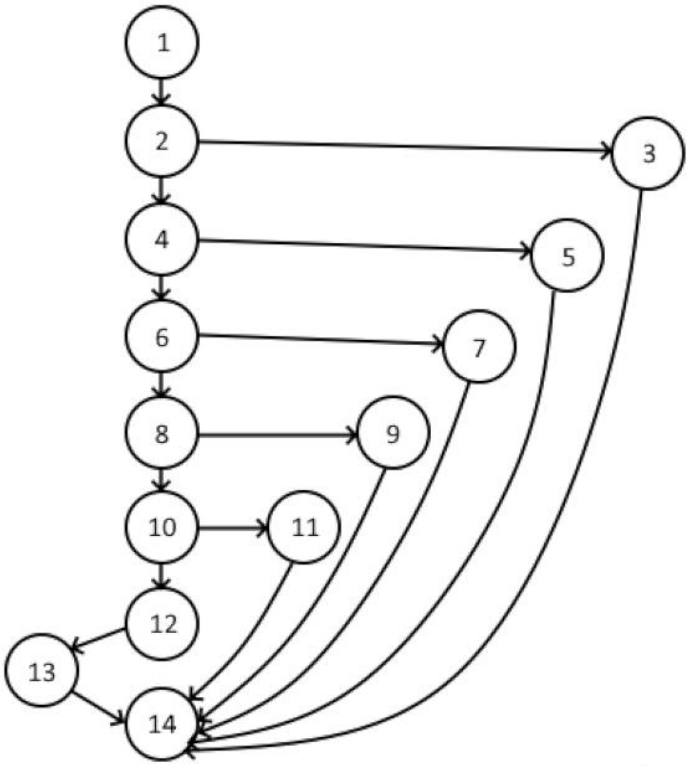
# Basis Path Testing

## Notes:

Our website currently does not contain any numerical calculations. Therefore, we have decided to complete our basis path testing using the flow of switch cases used for our password verification.

## 1: Algorithm and Flow Graph:

```
1:    switch($password) {

2:          case (strlen($password) < 5 || strlen($password) > 30):

3:                echo nl2br("Password must be at least 5-30 characters
          long." . "\n");

                  echo nl2br("\n");

                  return false;

4:          case (!preg_match($numReg, $password)):

5:                echo nl2br("Password must contain at least 1 number.".
          "\n");

                  echo nl2br("\n");

                  return false;

6:          case (null):

7:                echo nl2br("Password cannot be null." . "\n");

                  echo nl2br("\n");

                  return false;

8:          case (!preg_match($symbolReg, $password)):

9:                echo nl2br("Password must contain at least 1 special
          character.". "\n");

                  echo nl2br("\n");

                  return false;

10:         case (!preg_match($capitalReg, $password)):

11:               echo nl2br("Password must contain at least 1 capital
          character." . "\n");

                  echo nl2br("\n");

                  return false;

12:         default:

13:         return true;

14:         }
```




## 2: Cyclomatic Complexity:

We can use a calculation to discover the number of individual paths that can be taken from the above graph. We will discover this using the calculation below:

Vertex = V.
Graph = G.
Edge = E.
Node = N.

V(G) = E – N + 2
= 18 – 14 + 2
= 6

There are 6 independent paths that can be taken through the above graph.

## 3: Independent Paths:

1: 1-2-4-6-8-10-12-13-14
2: 1-2-4-6-8-10-11-14
3: 1-2-4-6-8-9-14
4: 1-2-4-6-7-14
5: 1-2-4-5-14
6: 1-2-3-14

## 4: Test Cases:

| Path: | Input: | Expected Outcome: | Outcome: |
|---|---|---|---|
| 1 | Password123! | true | true |
| 2 | password123! | false | false |
| 3 | Password123 | false | false |
| 4 | | false | false |
| 5 | Password! | false | false |
| 6 | Pw1! | false | false |