Software Testing

Assignment: 4 & 5

Submitted To: Mr. Samir Obaid

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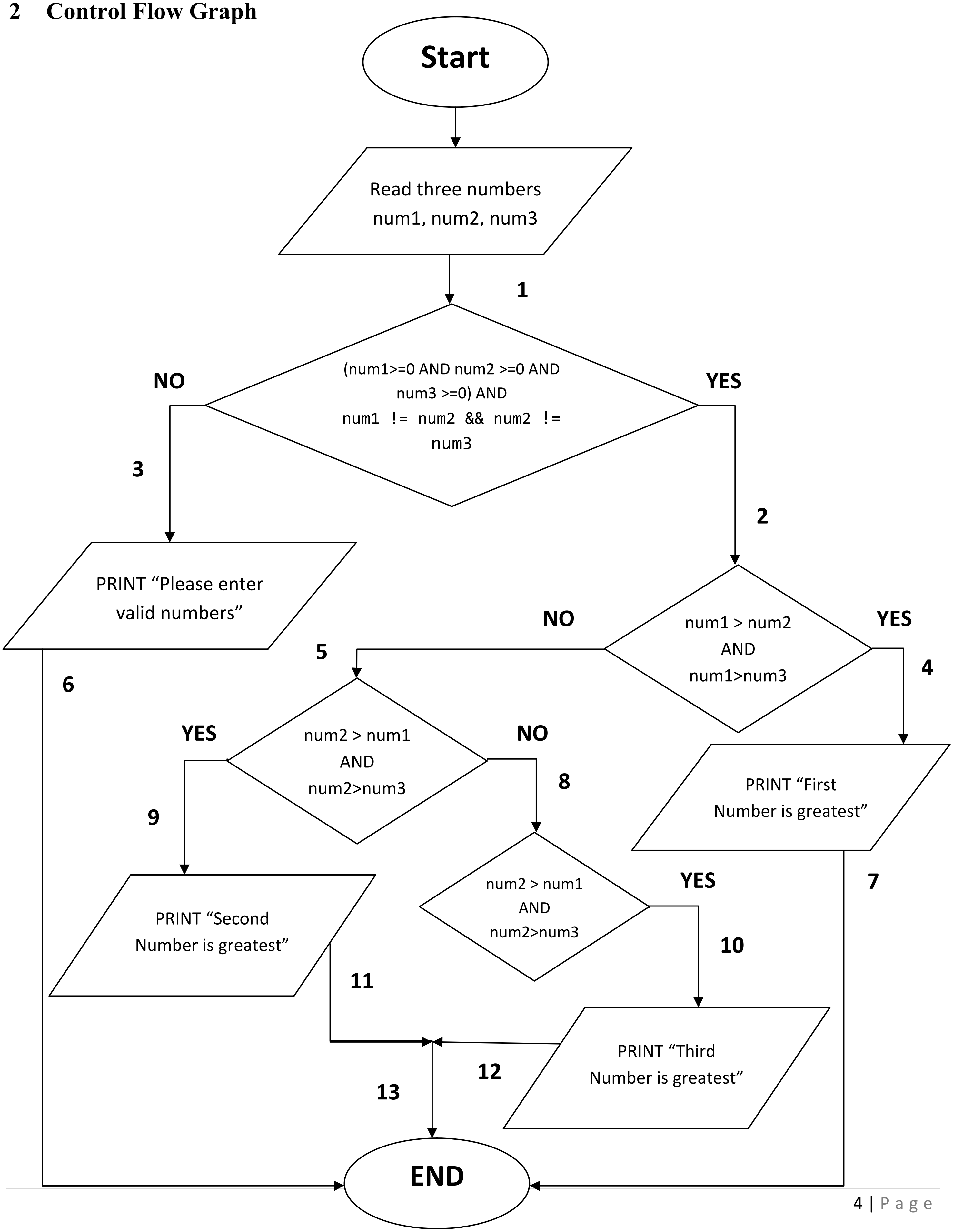
1 Code

```
#include<iostream>
using namespace std;
void main() {
      int num1,num2,num3;
      cout << "Enter value for first number : ";
      cin >> num1;
      cout<< "Enter value for second number : ";
      cin>>num2;
      cout<< "Enter value for third number : ";
      cin>>num3;
      if (( (num1>=0) && (num2>=0) && (num3>=0) ) && !(num1 == num2 && num2 == num3))
      {
      if ( (num1>num2) && (num1>num3) )
      {
            cout<< "First number is greatest:" << endl << "which is : "<<num1;
      }
      else if ( (num2>num1) && (num2>num3) )
      {
            cout<< " Second number is greatest" << endl << "which is : "<<num2;
      }
      else if ( (num3>num1) && (num3>num2) )
      {
            cout<< " Third number is greatest" << endl << "which is : " <<num3;
      }
      }
      else
      {
            cout<< "Please enter valid numbers"<<endl << "” "<<endl ;
      }

}
```

2 Control Flow Graph



3 MCDC

3.1 Decision Statement to check validity

Input			Output
Num1	**Num2**	**Num3**	**(((num1>=0) && (num2>=0) && (num3>=0)) && !(num1 == num2 && num2 == num3)**
T	**T**	**T**	T
T	**T**	**F**	F
T	**F**	**T**	F
T	**F**	**F**	F
F	**T**	**T**	F
F	**T**	**F**	F
F	**F**	**T**	F
F	**F**	**F**	F

3.1.1 Implementation

Input Values			Output
Num1	**Num2**	**Num3**	**(((num1>=0) && (num2>=0) && (num3>=0)) && !(num1 == num2 && num2 == num3)**
3	2	8	T
5	4	-1	F
12	-2	9	F
5	-2	-1	F
-2	3	10	F
-1	13	-6	F
-7	-8	12	F
-4	-1	-1	F

3.2 Decision Statement for number 1

Input			Output
Num1	**Num2**	**Num3**	**(num1>num2) && (num1>num3)**
T	**T**	**T**	T
T	**T**	**F**	F
T	**F**	**T**	F
T	**F**	**F**	T
F	**T**	**T**	F
F	**T**	**F**	T
F	**F**	**T**	T
F	**F**	**F**	F

3.2.1 Implementation

Input			Output
Num1	**Num2**	**Num3**	**(num1>num2) && (num1>num3)**
22	2	20	F
3	3	2	F
3	2	3	F
5	2	1	T
-1	3	4	F
6	4	3	T
12	8	9	T
-1	-4	-12	F

3.3 Decision Statement for number 2

Input			Output
Num1	**Num2**	**Num3**	**((num2>num1)&& (num2>num3))**
T	**T**	**T**	T
T	**T**	**F**	F
T	**F**	**T**	F
T	**F**	**F**	T
F	**T**	**T**	F
F	**T**	**F**	T
F	**F**	**T**	T
F	**F**	**F**	F

3.3.1 Implementation

Input			**Output**
Num1	**Num2**	**Num3**	**((num2>num1)&& (num2>num3))**
2	29	21	F
3	3	2	F
3	2	3	F
2	5	1	T
-1	3	4	F
2	67	3	T
9	83	12	T
-1	-4	-12	F

3.4 Decision Statement for number 3

Input			**Output**
Num1	**Num2**	**Num3**	**((num3>num1)&& (num3>num2))**
T	**T**	**T**	T
T	**T**	**F**	F
T	**F**	**T**	F
T	**F**	**F**	T
F	**T**	**T**	F
F	**T**	**F**	T
F	**F**	**T**	T
F	**F**	**F**	F

3.4.1 Implementation

Input			**Output**
Num1	**Num2**	**Num3**	**((num3>num1)&& (num3>num2))**
2	12	21	F
3	3	2	F
3	2	3	F
5	2	12	T
-1	3	4	F
6	4	37	T
12	8	91	T
-1	-4	-12	F

4 Predicted Paths

4.1 Path 1

1 →3 →6

4.1.1 Expression

```
((num1>=0) && (num2>=0) && (num3>=0) )&& !(num1 == num2 && num2 == num3)
```

4.2 Path 2

1→ 2→ 4→ 7

4.2.1 Expression

((num1>num2) && (num1>num3))

4.3 Path 3

1 →2→ →5→ 9→ 11→ 13

4.3.1 Expression

((num2>num1)&& (num2>num3))

4.4 Path 4

1→ 2→ 5→ 8→ 10→ 12→ 13

4.4.1 Expression

((num3>num1)&& (num3>num2)

5 Test Oracle

5.1 Expected Outputs

5.1.1 Output 1:

Please enter valid numbers

Should be Unequal

5.1.2 Output 2:

First number is greatest:

which is : num1

5.1.3 Output 3:

First number is greatest:

which is : num2

5.1.4 Output 4:

First number is greatest: which is : num3

Path No.	**Predicted Paths**	**Inputs**			**Expected Output**	**Actual Output**
		Num1	**Num2**	**Num3**		
1.	1 →3 →6	2	2	1	Please enter valid numbers Should be Unequal	Please enter valid numbers Should be Unequal
2.	1→ 2→ 4→ 7	21	9	7	First number is greatest : which is : 21	First number is greatest : which is : 21
3.	1 →2→ →5→ 9→ 11→ 13	12	62	61	Second number is greatest : which is : 62	Second number is greatest : which is : 62
4.	1→ 2→ 5→ 8→ 10→ 12→ 13	7	11	12	Third number is greatest : which is : 12	Third number is greatest : which is : 12