

SIMULATION CLASS TEST CASES:

- a. Default constructor should set the value of sideOnTop to zero.
- b. Non-Default constructor can only set the value to zero or one in all other cases it becomes zero.
- c. setSideOnTop can only set the value to zero or one in all other cases it becomes zero.
- d. getSideOnTop should return only zero or one.
- e. Flip should generate zero or one randomly and return the answer.

Test Case	Reason	Input Data	Expected Output & Reason
Default Constructor	Verify default side is set to 0	Simulation sim = new Simulation();	The method getSideOnTop() should return 0.
Non-Default Constructor (Valid)	Test valid side values	Simulation sim1 = new Simulation(1);	The method getSideOnTop() should return 1.
Non-Default Constructor (Invalid integer)	If an invalid number is given.	Simulation sim2 = new Simulation(-1);	The method getSideOnTop() should return the default value equal to 0.
Non-Default Constructor (Invalid string)	If a string is given.	Simulation sim2 = new Simulation("abc");	This would generate an error.
Non-Default Constructor (Invalid double)	If a double is given.	Simulation sim2 = new Simulation(4.3);	This would generate an error. Lossy conversion
setSideOnTop (Valid)	Verify setting valid side values	Simulation sim = new Simulation(); sim.setSideOnTop(1);	sim.getSideOnTop() == 1
setSideOnTop (Invalid integer)	Verify handling of negative side values	Simulation sim = new Simulation(); sim.setSideOnTop(-2);	The method getSideOnTop() should return the default value equal to 0.
setSideOnTop (Invalid String)	Verify handling of String values	Simulation sim = new Simulation(); sim.setSideOnTop("abc");	This generates an error.
setSideOnTop (Invalid double)	Verify handling of double values	Simulation sim = new Simulation(); sim.setSideOnTop(4.3);	This generates an error. Lossy Conversion

Test Case	Reason	Input Data	Expected Output & Reason
getSideOnTop	Verify returned value range	Simulation sim = new Simulation(1);	sim.getSideOnTop() == 1
flip (Randomness)	Check random generation	Simulation sim = new Simulation(); sim.flip();	Any number between 0 or 1 (integers)
toString	Verify string format	Simulation sim = new Simulation(); sim.toString();	String starts with "flip ="