# Department of Software Engineering/ Computer Science

**Course Code: CS332**

**Class: BSCS9ABC**

**Lab 03: Implenting the Concept of Load Balancer inside Data Centers using OMNeT++**

**CLO4: Develop Distributed Applications/Systems**

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# Instructors: Shah Khalid, Dr.Farzana Jabeen

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| FATIMA SEEMAB  291310  CS 9B |

CODE

**CC File**

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| **#include** <string.h>  **#include** <omnetpp.h>  **using** **namespace** omnetpp;  **class** Sink : **public** cSimpleModule  {  **protected**: // The following redefined virtual function holds the algorithm.  **virtual** **void** **initialize**() **override**;  **virtual** **void** **handleMessage**(cMessage \*msg) **override**;  };  **class** LoadBalancer : **public** cSimpleModule  {  **protected**: // The following redefined virtual function holds the algorithm.  **virtual** **void** **initialize**() **override**;  **virtual** **void** **handleMessage**(cMessage \*msg) **override**;  };  **class** Node : **public** cSimpleModule  {  **protected**: // The following redefined virtual function holds the algorithm.  **virtual** **void** **initialize**() **override**;  **virtual** **void** **handleMessage**(cMessage \*msg) **override**;  };  Define\_Module(Sink);  Define\_Module(Node);  Define\_Module(LoadBalancer);  **void** **Node::initialize**() {  cMessage \*msg = **new** cMessage("sending data");  send(msg, "out");  }  **void** **Node::handleMessage**(cMessage \*msg)  {}  **void** **LoadBalancer::initialize**() {  }  **void** **LoadBalancer::handleMessage**(cMessage \*msg)  {  **int** number = **rand**()%2;  **switch**(number)  {  **case** 0:  send(msg, "out", 0);  **break**;  **case** 1:  send(msg, "out", 1);  **break**;  }  }  **void** **Sink::initialize**() {  }  **void** **Sink::handleMessage**(cMessage \*msg)  {  } |

**Ini file**

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| [General]  network =Lab3\_1 |

**NED File**

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| *//*  *// This program is free software: you can redistribute it and/or modify*  *// it under the terms of the GNU Lesser General Public License as published by*  *// the Free Software Foundation, either version 3 of the License, or*  *// (at your option) any later version.*  *//*  *// This program is distributed in the hope that it will be useful,*  *// but WITHOUT ANY WARRANTY; without even the implied warranty of*  *// MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the*  *// GNU Lesser General Public License for more details.*  *//*  *// You should have received a copy of the GNU Lesser General Public License*  *// along with this program. If not, see http://www.gnu.org/licenses/.*  *//*  **network** Lab3\_1  { **types**:  **simple** Sink  {  **gates**:  **input** in;    }  **simple** Node  {  **gates**:  **output** out;    }  **simple** LoadBalancer  {  **gates**:  **output** out[];  **input** in[];    }  **submodules**:  node1: Node {  **@display**("p=189.98,23.6");  }  node2: Node {  **@display**("p=153.98999,82.009995");  }  node3: Node {  **@display**("p=212.98999,133.93");  }  node4: Node {  **@display**("p=247.20999,181.12999");  }  node5: Node {  **@display**("p=299.13,198.83");  }  loadbalancer: LoadBalancer;  sink1: Sink {  **@display**("p=460.78998,28.32");  }  sink2: Sink {  **@display**("p=466.09998,117.409996");  }  **connections**:  node1.out **-->** { delay = 100ms; } **-->** loadbalancer.in++;  node2.out **-->** { delay = 100ms; } **-->** loadbalancer.in++;  node3.out **-->** { delay = 100ms; } **-->** loadbalancer.in++;  node4.out **-->** { delay = 100ms; } **-->** loadbalancer.in++;  node5.out **-->** { delay = 100ms; } **-->** loadbalancer.in++;  loadbalancer.out++ **-->** { delay = 100ms; } **-->** sink1.in;  loadbalancer.out++ **-->** { delay = 100ms; } **-->** sink2.in;  } |

Output

**Initial Stage**

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| Diagram  Description automatically generated |

**Message at Load Balancer**

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| **Diagram, schematic  Description automatically generated** |

**Sending Load Balancer to Sink**

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| Diagram, schematic  Description automatically generated |

**Data At Sink Node**

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| Diagram  Description automatically generated |