EXP. No: 5 IMPLEMENTATION OF VARIOUS SCHEDULING MECHANISMS USING OPEN SOURCE CLOUD SIMULATOR

Aim :

To install open source cloud simulator cloudsim and implement various scheduling mechanisms using cloudsim.

Steps to be done:

1.Installation of Cloudsim

Step 1: Download cloudsim 3.0.3 from the given link

<https://github.com/Cloudslab/cloudsim/releases>

Step 2: JDK is essential for running cloudsim so download the latest version of jdk file from the given link

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

Step 3: Open a terminal, and run the following command

sudo add-apt-repository ppa:webupd8team/java

sudo apt-get update && sudo apt-get install oracle-java8-installer

Step 4: Set the JAVA\_HOME to the environment , open up a terminal

sudo gedit /etc/environment

then set the path file where the java file is placed

JAVA\_HOME="/home/student/Downloads/jdk1.8.0\_12"

Step 5: Unzip the cloudsim 3.0.3

unzip <filename>

Step 6: Set the CLASSPATH where the location of the class files present and will be used by cloudsim while executing an application

sudo gedit /home/student/.bashrc

Step 7: Give the CLASSPATH

CLASSPATH=".:/home/student/Desktop/cloudsim-3.0.3/jars/\*: home/student/Desktop/cloudsim-3.0.3/examples"  
 export CLASSPATH

Step 8: reload the .bashrc file to close the all opened terminals

source ~/.bashrc

Step 9: Run a sample program to test the environment(compilation)

javac /home/student/Desktop/cloudsim3.0.3/examples/

org/cloudbus/cloudsim/examples/CloudSimExample1.java

Step 10:Then run the program by using the following command

java org.cloudbus.cloudsim.examples.CloudSimExample1

to save the output of a program to a file, use the following command

java org.cloudbus.cloudsim.examples.CloudSimExample1 > output.txt (target file)

IMPLEMENTATION OF SCHEDULING MECHANISMS:

Implementation of various scheduling mechanisms such as roundrobin,SJF,FCFS,priority scheduling

program for SJF:

package org.cloudbus.cloudsim.examples;

import java.io. \* ;

import java.text.DecimalFormat;

import java.util.ArrayList;

import java.util.Calendar;

import java.util.LinkedList;

import java.util.List;

import org.cloudbus.cloudsim.Cloudlet;

import org.cloudbus.cloudsim.CloudletSchedulerTimeShared;

import org.cloudbus.cloudsim.Datacenter;

import org.cloudbus.cloudsim.DatacenterBroker;

import org.cloudbus.cloudsim.DatacenterCharacteristics;

import org.cloudbus.cloudsim.Host;

import org.cloudbus.cloudsim.Log;

import org.cloudbus.cloudsim.Pe;

import org.cloudbus.cloudsim.Storage;

import org.cloudbus.cloudsim.UtilizationModel;

import org.cloudbus.cloudsim.UtilizationModelFull;

import org.cloudbus.cloudsim.Vm;

import org.cloudbus.cloudsim.VmAllocationPolicySimple;

import org.cloudbus.cloudsim.VmSchedulerTimeShared;

import org.cloudbus.cloudsim.core.CloudSim;

import org.cloudbus.cloudsim.provisioners.BwProvisionerSimple;

import org.cloudbus.cloudsim.provisioners.PeProvisionerSimple;

import org.cloudbus.cloudsim.provisioners.RamProvisionerSimple;

import java.util.\*;

class SJF

{

public static void main(String args[])

{

Scanner sc=new Scanner(System.in);

int n,BT[],WT[],TAT[];

System.out.println("Enter no of process");

n=sc.nextInt();

BT=new int[n+1];

WT=new int[n+1];

TAT=new int[n+1];

float AWT=0;

System.out.println("Enter Burst time for each process");

for(int i=0;i<n;i++)

{

System.out.println("Enter BT for process "+(i+1));

BT[i]=sc.nextInt();

}

for(int i=0;i<n;i++)

{

WT[i]=0; TAT[i]=0;

}

int temp;

for(int i=0;i<n;i++)

{

for(int j=0;j<n-1;j++)

{

if(BT[j]>BT[j+1])

{

temp=BT[j];

BT[j]=BT[j+1];

BT[j+1]=temp;

temp=WT[j];

WT[j]=WT[j+1];

WT[j+1]=temp;

}

}

}

for(int i=0;i<n;i++)

{

TAT[i]=BT[i]+WT[i];

WT[i+1]=TAT[i];

}

TAT[n]=WT[n]+BT[n];

System.out.println("PROCESS BT WT TAT ");

for(int i=0;i<n;i++)

System.out.println(" "+ i + " "+BT[i]+" "+WT[i]+" "+TAT[i]);

for(int j=0;j<n;j++) AWT+=WT[j];

AWT=AWT/n;

System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.out.println("AVG WAITNG TIME" +AWT+ "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

}

}

Program for FCFS:

package org.cloudbus.cloudsim.examples;

import java.io. \* ;

import java.text.DecimalFormat;

import java.util.ArrayList;

import java.util.Calendar;

import java.util.LinkedList;

import java.util.List;

import org.cloudbus.cloudsim.Cloudlet;

import org.cloudbus.cloudsim.CloudletSchedulerTimeShared;

import org.cloudbus.cloudsim.Datacenter;

import org.cloudbus.cloudsim.DatacenterBroker;

import org.cloudbus.cloudsim.DatacenterCharacteristics;

import org.cloudbus.cloudsim.Host;

import org.cloudbus.cloudsim.Log;

import org.cloudbus.cloudsim.Pe;

import org.cloudbus.cloudsim.Storage;

import org.cloudbus.cloudsim.UtilizationModel;

import org.cloudbus.cloudsim.UtilizationModelFull;

import org.cloudbus.cloudsim.Vm;

import org.cloudbus.cloudsim.VmAllocationPolicySimple;

import org.cloudbus.cloudsim.VmSchedulerTimeShared;

import org.cloudbus.cloudsim.core.CloudSim;

import org.cloudbus.cloudsim.provisioners.BwProvisionerSimple;

import org.cloudbus.cloudsim.provisioners.PeProvisionerSimple;

import org.cloudbus.cloudsim.provisioners.RamProvisionerSimple;

public class Fcfs {

public static void main(String args[]) throws Exception {

int n,

AT[],

BT[],

WT[],

TAT[];

float AWT = 0;

InputStreamReader isr = new InputStreamReader(System. in );

BufferedReader br = new BufferedReader(isr);

System.out.println("Enter no of process");

n = Integer.parseInt(br.readLine());

BT = new int[n];

WT = new int[n];

TAT = new int[n];

AT = new int[n];

System.out.println("Enter Burst time for each process\n\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

for (int i = 0; i < n; i++) {

System.out.println("Enter BT for process " + (i + 1));

BT[i] = Integer.parseInt(br.readLine());

}

System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

for (int i = 0; i < n; i++) {

System.out.println("Enter AT for process" + i);

AT[i] = Integer.parseInt(br.readLine());

}

System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

WT[0] = 0;

for (int i = 1; i < n; i++) {

WT[i] = WT[i - 1] + BT[i - 1];

WT[i] = WT[i] - AT[i];

}

for (int i = 0; i < n; i++) {

TAT[i] = WT[i] + BT[i];

AWT = AWT + WT[i];

}

System.out.println(" PROCESS BT WT TAT ");

for (int i = 0; i < n; i++) {

System.out.println(" " + i + " " + BT[i] + " " + WT[i] + " " + TAT[i]);

}

AWT = AWT / n;

System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.out.println("Avg waiting time=" + AWT + "\n\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

}

}