Ministerul Educaţiei, al Culturii și Cercetării al Republicii Moldova

Universitatea Tehnică a Moldovei

Departamentul Informatică și Ingineria Sistemelor

**RAPORT**

Lucrarea de laborator nr.4

ASO

A efectuat:

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A verificat:

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Chişinău 2020

Varianta:4

Scrieţi un program pentru X (unde X este egal cu numărul variantei plus numărul subgrupei) scriitori

şi Y (unde Y este egal cu numărul variantei înmulţit cu 2 plus numărul subgrupei) cititori,

fiecare scriitor scrie cîte Z (unde Z este egal cu numărul variantei plus 3) obiecte.

X (unde X este egal cu numărul variantei plus numărul subgrupei)

Y (unde Y este egal cu numărul variantei înmulţit cu 2 plus numărul subgrupei)

Z (unde Z este egal cu numărul variantei plus 3) obiecte.

X scriitori 5

Y cititori 9

Z carti 7

Listingul programului:

import java.util.concurrent.Semaphore;

import java.util.LinkedList;

import java.util.Random;

class ex {

static Semaphore readLock = new Semaphore(1);

static Semaphore writeLock = new Semaphore(1);

static int readCount = 0;

static LinkedList list = new LinkedList();

static boolean go = true;

static class Read implements Runnable {

@Override

public void run() {

try { Thread.sleep(200); }

catch (InterruptedException e) {}

int t = 0;

t = list.size();

try {

while (t != 0) {

//Acquire Section

readLock.acquire();

readCount++;

// Thread.sleep(150);

if (readCount == 1) {

writeLock.acquire();

}

readLock.release();

//Reading section

t--;

int x = count();

System.out.println("\t" + x + ") Reader " + Thread.currentThread().getName() + " is READING " + list.get(t) );

// Thread.sleep(150);

//Releasing section

readLock.acquire();

readCount--;

if(readCount == 0) {

writeLock.release();

}

readLock.release();

}

System.out.println("\tReader " + Thread.currentThread().getName() + " has FINISHED READING");

} /\* end try \*/

catch (InterruptedException e) {

System.out.println(e.getMessage());

}

}

}

static class Write implements Runnable {

@Override

public void run() {

int temp = 0;

try {

while ( putBook(Thread.currentThread().getName()) <= 7) {

writeLock.acquire();

System.out.println("Writer " + Thread.currentThread().getName() + " is WRITING " + temp);

lib("put");

list.add(temp++);

writeLock.release();

}

System.out.println("Writer " + Thread.currentThread().getName() + " finished");

} catch (InterruptedException e) {

System.out.println(e.getMessage());

}

}

}

static int[] booksWritten = new int[7];

static public int putBook(String s) {

int z = Integer.parseInt(s);

booksWritten[z]++;

return booksWritten[z];

}

static int count = 1;

static public int count() {

return count++;

}

static int books = 0;

static public int lib(String s) {

if (s == "put")

books++;

if (s == "get")

books--;

return books;

}

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

try { new ProcessBuilder("cmd", "/c", "cls").inheritIO().start().waitFor(); }

catch (Exception e1) { System.out.println(e1); }

Read read = new Read();

Write write = new Write();

Thread t1 = new Thread(write);

t1.setName("0");

Thread t2 = new Thread(write);

t2.setName("1");

Thread t3 = new Thread(write);

t3.setName("2");

Thread t4 = new Thread(write);

t4.setName("3");

Thread t5 = new Thread(write);

t5.setName("4");

Thread t6 = new Thread(read);

t6.setName("1");

Thread t7 = new Thread(read);

t7.setName("2");

Thread t8 = new Thread(read);

t8.setName("3");

Thread t9 = new Thread(read);

t9.setName("4");

Thread t10 = new Thread(read);

t10.setName("5");

Thread t11 = new Thread(read);

t11.setName("6");

Thread t12 = new Thread(read);

t12.setName("7");

Thread t13 = new Thread(read);

t13.setName("8");

Thread t14 = new Thread(read);

t14.setName("0");

t1.start();

t3.start();

t2.start();

t4.start();

t5.start();

t6.start();

t7.start();

t8.start();

t9.start();

t10.start();

t11.start();

t12.start();

t13.start();

t14.start();

}

}

Output:

Writer 1 is WRITING 0

Writer 1 is WRITING 1

Writer 1 is WRITING 2

Writer 1 is WRITING 3

Writer 1 is WRITING 4

Writer 1 is WRITING 5

Writer 1 is WRITING 6

Writer 4 is WRITING 0

Writer 4 is WRITING 1

Writer 4 is WRITING 2

Writer 4 is WRITING 3

Writer 4 is WRITING 4

Writer 0 is WRITING 0

Writer 3 is WRITING 0

Writer 2 is WRITING 0

Writer 4 is WRITING 5

Writer 4 is WRITING 6

Writer 0 is WRITING 1

Writer 0 is WRITING 2

Writer 3 is WRITING 1

Writer 3 is WRITING 2

Writer 2 is WRITING 1

Writer 2 is WRITING 2

Writer 0 is WRITING 3

Writer 3 is WRITING 3

Writer 4 finished

Writer 3 is WRITING 4

Writer 1 finished

Writer 3 is WRITING 5

Writer 3 is WRITING 6

Writer 3 finished

Writer 2 is WRITING 3

Writer 2 is WRITING 4

Writer 2 is WRITING 5

Writer 2 is WRITING 6

Writer 2 finished

Writer 0 is WRITING 4

Writer 0 is WRITING 5

Writer 0 is WRITING 6

Writer 0 finished

1) Reader 2 is READING 6

10) Reader 2 is READING 5

8) Reader 4 is READING 6

9) Reader 3 is READING 6

3) Reader 0 is READING 6

6) Reader 5 is READING 6

7) Reader 6 is READING 6

15) Reader 5 is READING 5

16) Reader 6 is READING 5

5) Reader 7 is READING 6

19) Reader 7 is READING 5

14) Reader 0 is READING 5

13) Reader 3 is READING 5

22) Reader 3 is READING 4

23) Reader 3 is READING 6

24) Reader 3 is READING 5

12) Reader 4 is READING 5

11) Reader 2 is READING 4

2) Reader 1 is READING 6

4) Reader 8 is READING 6

28) Reader 1 is READING 5

27) Reader 2 is READING 6

26) Reader 4 is READING 4

25) Reader 3 is READING 4

21) Reader 0 is READING 4

20) Reader 7 is READING 4

18) Reader 6 is READING 4

17) Reader 5 is READING 4

36) Reader 6 is READING 6

35) Reader 7 is READING 6

34) Reader 0 is READING 6

33) Reader 3 is READING 3

41) Reader 3 is READING 6

32) Reader 4 is READING 6

31) Reader 2 is READING 5

30) Reader 1 is READING 4

45) Reader 1 is READING 6

29) Reader 8 is READING 5

46) Reader 1 is READING 5

44) Reader 2 is READING 4

43) Reader 4 is READING 5

42) Reader 3 is READING 5

40) Reader 0 is READING 5

39) Reader 7 is READING 5

38) Reader 6 is READING 5

54) Reader 6 is READING 4

55) Reader 6 is READING 3

37) Reader 5 is READING 6

56) Reader 6 is READING 6

53) Reader 7 is READING 4

59) Reader 7 is READING 3

52) Reader 0 is READING 4

51) Reader 3 is READING 4

50) Reader 4 is READING 4

49) Reader 2 is READING 3

64) Reader 2 is READING 6

48) Reader 1 is READING 4

47) Reader 8 is READING 4

66) Reader 1 is READING 3

65) Reader 2 is READING 5

63) Reader 4 is READING 3

62) Reader 3 is READING 3

61) Reader 0 is READING 3

60) Reader 7 is READING 6

58) Reader 6 is READING 5

57) Reader 5 is READING 5

74) Reader 6 is READING 4

73) Reader 7 is READING 5

72) Reader 0 is READING 6

71) Reader 3 is READING 3

79) Reader 3 is READING 2

80) Reader 3 is READING 1

70) Reader 4 is READING 6

69) Reader 2 is READING 4

83) Reader 2 is READING 3

68) Reader 1 is READING 6

67) Reader 8 is READING 6

86) Reader 8 is READING 5

85) Reader 1 is READING 5

84) Reader 2 is READING 3

82) Reader 4 is READING 5

81) Reader 3 is READING 2

78) Reader 0 is READING 5

77) Reader 7 is READING 4

76) Reader 6 is READING 3

94) Reader 6 is READING 3

95) Reader 6 is READING 2

75) Reader 5 is READING 4

96) Reader 6 is READING 1

93) Reader 7 is READING 3

99) Reader 7 is READING 3

92) Reader 0 is READING 4

101) Reader 0 is READING 3

91) Reader 3 is READING 1

90) Reader 4 is READING 4

104) Reader 4 is READING 3

89) Reader 2 is READING 2

106) Reader 2 is READING 1

88) Reader 1 is READING 4

87) Reader 8 is READING 4

108) Reader 1 is READING 3

107) Reader 2 is READING 2

105) Reader 4 is READING 3

103) Reader 3 is READING 2

102) Reader 0 is READING 3

114) Reader 0 is READING 2

100) Reader 7 is READING 2

98) Reader 6 is READING 2

97) Reader 5 is READING 3

118) Reader 5 is READING 6

117) Reader 6 is READING 1

116) Reader 7 is READING 1

115) Reader 0 is READING 1

113) Reader 3 is READING 1

112) Reader 4 is READING 2

111) Reader 2 is READING 1

110) Reader 1 is READING 3

126) Reader 1 is READING 2

109) Reader 8 is READING 3

127) Reader 1 is READING 1

125) Reader 2 is READING 2

124) Reader 4 is READING 1

123) Reader 3 is READING 6

122) Reader 0 is READING 2

121) Reader 7 is READING 2

120) Reader 6 is READING 2

135) Reader 6 is READING 1

119) Reader 5 is READING 5

136) Reader 6 is READING 6

134) Reader 7 is READING 1

133) Reader 0 is READING 1

132) Reader 3 is READING 5

131) Reader 4 is READING 2

130) Reader 2 is READING 1

143) Reader 2 is READING 6

129) Reader 1 is READING 2

128) Reader 8 is READING 6

145) Reader 1 is READING 1

144) Reader 2 is READING 5

142) Reader 4 is READING 1

141) Reader 3 is READING 0

140) Reader 0 is READING 2

139) Reader 7 is READING 2

138) Reader 6 is READING 5

137) Reader 5 is READING 4

153) Reader 6 is READING 0

152) Reader 7 is READING 1

151) Reader 0 is READING 1

150) Reader 3 is READING 0

149) Reader 4 is READING 2

148) Reader 2 is READING 0

147) Reader 1 is READING 2

146) Reader 8 is READING 5

161) Reader 1 is READING 1

160) Reader 2 is READING 0

159) Reader 4 is READING 1

158) Reader 3 is READING 0

166) Reader 3 is READING 4

157) Reader 0 is READING 6

156) Reader 7 is READING 6

155) Reader 6 is READING 0

154) Reader 5 is READING 3

171) Reader 5 is READING 3

170) Reader 6 is READING 0

169) Reader 7 is READING 5

168) Reader 0 is READING 5

167) Reader 3 is READING 3

165) Reader 4 is READING 6

164) Reader 2 is READING 0

163) Reader 1 is READING 6

162) Reader 8 is READING 4

179) Reader 1 is READING 5

178) Reader 2 is READING 4

177) Reader 4 is READING 5

176) Reader 3 is READING 2

184) Reader 3 is READING 1

175) Reader 0 is READING 0

186) Reader 0 is READING 0

174) Reader 7 is READING 0

173) Reader 6 is READING 4

172) Reader 5 is READING 2

189) Reader 6 is READING 3

188) Reader 7 is READING 0

187) Reader 0 is READING 0

193) Reader 0 is READING 4

185) Reader 3 is READING 0

183) Reader 4 is READING 0

182) Reader 2 is READING 3

181) Reader 1 is READING 0

180) Reader 8 is READING 3

198) Reader 1 is READING 0

197) Reader 2 is READING 2

196) Reader 4 is READING 0

195) Reader 3 is READING 6

194) Reader 0 is READING 3

204) Reader 0 is READING 2

192) Reader 7 is READING 0

206) Reader 7 is READING 4

191) Reader 6 is READING 2

190) Reader 5 is READING 1

208) Reader 6 is READING 1

210) Reader 6 is READING 0

207) Reader 7 is READING 3

205) Reader 0 is READING 1

203) Reader 3 is READING 5

202) Reader 4 is READING 0

201) Reader 2 is READING 1

200) Reader 1 is READING 0

199) Reader 8 is READING 3

217) Reader 1 is READING 4

219) Reader 1 is READING 3

216) Reader 2 is READING 0

215) Reader 4 is READING 4

214) Reader 3 is READING 4

213) Reader 0 is READING 0

212) Reader 7 is READING 2

211) Reader 6 is READING 6

209) Reader 5 is READING 2

226) Reader 6 is READING 5

225) Reader 7 is READING 1

224) Reader 0 is READING 6

223) Reader 3 is READING 3

222) Reader 4 is READING 3

221) Reader 2 is READING 6

220) Reader 1 is READING 2

218) Reader 8 is READING 2

234) Reader 1 is READING 1

236) Reader 1 is READING 0

233) Reader 2 is READING 5

238) Reader 2 is READING 4

232) Reader 4 is READING 2

231) Reader 3 is READING 2

230) Reader 0 is READING 5

229) Reader 7 is READING 0

228) Reader 6 is READING 4

227) Reader 5 is READING 1

244) Reader 6 is READING 3

243) Reader 7 is READING 6

242) Reader 0 is READING 4

248) Reader 0 is READING 3

241) Reader 3 is READING 1

250) Reader 3 is READING 0

240) Reader 4 is READING 1

239) Reader 2 is READING 3

237) Reader 1 is READING 6

253) Reader 1 is READING 5

235) Reader 8 is READING 1

254) Reader 1 is READING 4

252) Reader 2 is READING 2

251) Reader 4 is READING 0

Reader 3 has FINISHED READING

249) Reader 0 is READING 2

247) Reader 7 is READING 5

246) Reader 6 is READING 2

245) Reader 5 is READING 2

261) Reader 6 is READING 1

260) Reader 7 is READING 4

259) Reader 0 is READING 1

265) Reader 0 is READING 0

258) Reader 4 is READING 6

257) Reader 2 is READING 1

256) Reader 1 is READING 3

255) Reader 8 is READING 2

268) Reader 1 is READING 2

267) Reader 2 is READING 0

266) Reader 4 is READING 5

Reader 0 has FINISHED READING

264) Reader 7 is READING 3

263) Reader 6 is READING 0

262) Reader 5 is READING 1

Reader 6 has FINISHED READING

272) Reader 7 is READING 2

271) Reader 4 is READING 4

Reader 2 has FINISHED READING

270) Reader 1 is READING 1

269) Reader 8 is READING 1

276) Reader 1 is READING 0

275) Reader 4 is READING 3

274) Reader 7 is READING 1

273) Reader 5 is READING 6

279) Reader 7 is READING 0

278) Reader 4 is READING 2

281) Reader 4 is READING 1

Reader 1 has FINISHED READING

277) Reader 8 is READING 2

282) Reader 4 is READING 0

Reader 7 has FINISHED READING

280) Reader 5 is READING 5

Reader 4 has FINISHED READING

283) Reader 8 is READING 1

284) Reader 5 is READING 0

285) Reader 8 is READING 6

286) Reader 5 is READING 0

287) Reader 8 is READING 5

289) Reader 8 is READING 0

288) Reader 5 is READING 0

291) Reader 5 is READING 4

290) Reader 8 is READING 0

292) Reader 5 is READING 3

293) Reader 8 is READING 0

294) Reader 5 is READING 2

295) Reader 8 is READING 4

296) Reader 5 is READING 1

297) Reader 8 is READING 3

298) Reader 5 is READING 0

299) Reader 8 is READING 2

300) Reader 5 is READING 6

301) Reader 8 is READING 1

302) Reader 5 is READING 5

303) Reader 8 is READING 0

304) Reader 5 is READING 4

305) Reader 8 is READING 6

306) Reader 5 is READING 3

307) Reader 8 is READING 5

309) Reader 8 is READING 4

310) Reader 8 is READING 3

308) Reader 5 is READING 2

311) Reader 8 is READING 2

312) Reader 5 is READING 1

313) Reader 8 is READING 1

314) Reader 5 is READING 0

315) Reader 8 is READING 0

Reader 5 has FINISHED READING

Reader 8 has FINISHED READING

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