New solution for benchmark instances in Section 6.3

Table 1 The new solution of No.28, makespan=153

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job13,1(0,2);Job51,1(2,5);Job40,2(5,7);Job80,2(7,9);Job61,1(9,12);Job71,1(12,15);Job81,1(15,18);Job88,5(18,23);Job28,5(23,28);Job18,2(28,34);Job58,2(34,40);Job68,5(40,45);Job58,5(45,50);Job52,2(50,58);Job62,2(58,66);Job33,1(66,68);Job32,2(68,76);Job10,2(76,78);Job100,2(78,80);Job42,2(80,88);Job31,1(88,91);Job11,1(91,94);Job23,1(94,96);Job92,2(96,104);Job22,2(104,112);Job69,2(112,121);Job2,2(121,129);Job48,2(129,135);Job28,2(135,141);Job98,5(141,146);Job70,2(146,148);Job69,3(148,150) |
| 2 | Job90,2(0,2);Job30,5(2,5);Job67,3(5,8);Job30,2(8,10);Job92,1(10,18);Job21,1(18,22);Job54,3(22,32);Job24,3(32,42);Job20,2(42,44);Job19,5(44,51);Job72,1(51,59);Job50,2(59,61);Job90,5(61,64);Job60,2(64,66);Job4,3(66,76);Job62,1(76,84);Job44,3(84,94);Job14,3(94,104);Job69,5(104,111);Job84,3(111,121);Job34,3(121,131);Job12,1(131,139);Job29,5(139,146);Job9,5(146,153) |
| 3 | Job100,5(0,2);Job97,2(2,4);Job29,3(4,5);Job79,3(5,6);Job77,2(6,8);Job19,3(8,9);Job50,5(9,11);Job57,2(11,13);Job40,6(13,16);Job26,1(16,19);Job50,6(19,22);Job33,2(22,27);Job17,2(27,29);Job96,1(29,32);Job89,3(32,33);Job87,2(33,35);Job70,6(35,38);Job49,3(38,39);Job89,2(39,47);Job29,2(47,55);Job19,2(55,63);Job39,2(63,71);Job79,2(71,79);Job37,2(79,81);Job27,2(81,83);Job18,3(83,86);Job59,2(86,94);Job100,6(94,97);Job76,1(97,100);Job9,3(100,101);Job36,1(101,104);Job23,2(104,109);Job80,5(109,111);Job9,2(111,119);Job63,2(119,124);Job93,2(124,129);Job13,2(129,134);Job3,2(134,139);Job20,5(139,141);Job10,6(141,144);Job70,5(144,146);Job67,2(146,148);Job47,2(148,150);Job39,3(150,151);Job59,3(151,152);Job99,3(152,153) |
| 4 | Job78,3(0,2);Job38,3(2,4);Job98,2(4,9);Job38,2(9,14);Job49,2(14,21);Job40,3(21,31);Job42,1(31,40);Job70,3(40,50);Job100,3(50,60);Job41,1(60,63);Job68,1(63,68);Job88,2(68,73);Job28,1(73,78);Job78,2(78,83);Job38,1(83,88);Job8,2(88,93);Job48,1(93,98);Job91,1(98,101);Job29,6(101,102);Job89,6(102,103);Job1,1(103,106);Job20,3(106,116);Job60,3(116,126);Job50,3(126,136);Job99,2(136,143);Job68,2(143,148);Job8,1(148,153) |
| 5 | Job46,1(0,2);Job66,1(2,4);Job6,1(4,6);Job37,3(6,8);Job76,2(8,11);Job6,2(11,14);Job89,1(14,18);Job46,2(18,21);Job19,1(21,25);Job56,1(25,27);Job82,1(27,34);Job30,4(34,42);Job79,1(42,46);Job39,1(46,50);Job58,4(50,53);Job66,2(53,56);Job30,1(56,58);Job16,1(58,60);Job30,6(60,62);Job20,6(62,64);Job57,3(64,66);Job20,1(66,68);Job22,1(68,75);Job16,2(75,78);Job99,1(78,82);Job52,1(82,89);Job27,3(89,91);Job80,6(91,93);Job2,1(93,100);Job32,1(100,107);Job59,1(107,111);Job49,1(111,115);Job29,1(115,119);Job9,1(119,123);Job69,1(123,127);Job86,2(127,130);Job56,2(130,133);Job60,1(133,135);Job86,1(135,137);Job100,1(137,139);Job90,6(139,141);Job35,3(141,143);Job60,6(143,145);Job7,3(145,147);Job17,3(147,149);Job70,1(149,151);Job80,1(151,153) |
| 6 | Job84,2(0,2);Job90,4(2,11);Job20,4(11,20);Job70,4(20,29);Job60,4(29,38);Job59,4(38,40);Job18,1(40,47);Job15,3(47,48);Job78,1(48,55);Job99,4(55,57);Job55,3(57,58);Job94,2(58,60);Job79,4(60,62);Job45,3(62,63);Job100,4(63,72);Job50,4(72,81);Job7,2(81,84);Job10,5(84,86);Job34,2(86,88);Job3,1(88,90);Job14,2(90,92);Job39,4(92,94);Job19,4(94,96);Job95,3(96,97);Job24,2(97,99);Job5,3(99,100);Job73,1(100,102);Job4,2(102,104);Job65,3(104,105);Job85,3(105,106);Job9,4(106,108);Job64,2(108,110);Job54,2(110,112);Job80,4(112,121);Job40,4(121,130);Job29,4(130,132);Job44,2(132,134);Job43,1(134,136);Job74,2(136,138);Job49,4(138,140);Job63,1(140,142);Job69,4(142,144);Job69,6(144,146);Job89,4(146,148);Job40,5(148,150);Job60,5(150,152);Job75,3(152,153) |
| 7 | Job97,3(0,2);Job47,3(2,4);Job77,3(4,6);Job58,3(6,7);Job12,2(7,14);Job18,5(14,18);Job78,5(18,22);Job72,2(22,29);Job8,5(29,33);Job83,2(33,37);Job43,2(37,41);Job73,2(41,45);Job87,1(45,53);Job45,1(53,61);Job7,1(61,69);Job28,3(69,70);Job48,5(70,74);Job87,3(74,76);Job47,1(76,84);Job15,1(84,92);Job83,1(92,94);Job93,1(94,96);Job67,1(96,104);Job8,3(104,105);Job38,5(105,109);Job27,1(109,117);Job5,1(117,125);Job10,4(125,133);Job35,1(133,141);Job82,2(141,148);Job98,3(148,149);Job48,3(149,150);Job88,3(150,151);Job68,3(151,152) |
| 8 | Job8,4(0,2);Job28,4(2,4);Job48,4(4,6);Job18,4(6,8);Job39,5(8,14);Job98,4(14,16);Job74,3(16,25);Job59,5(25,31);Job19,6(31,33);Job25,3(33,35);Job6,3(35,43);Job49,5(43,49);Job94,3(49,58);Job88,4(58,60);Job68,4(60,62);Job66,3(62,70);Job38,4(70,72);Job26,3(72,80);Job56,3(80,88);Job16,3(88,96);Job64,3(96,105);Job96,3(105,113);Job86,3(113,121);Job36,3(121,129);Job46,3(129,137);Job76,3(137,145);Job53,2(145,151);Job78,4(151,153) |
| 9 | Job98,6(0,2);Job8,6(2,4);Job75,2(4,6);Job78,6(6,8);Job68,6(8,10);Job25,2(10,12);Job53,1(12,15);Job88,6(15,17);Job28,6(17,19);Job45,2(19,21);Job15,2(21,23);Job5,2(23,25);Job35,2(25,27);Job97,1(27,37);Job85,2(37,39);Job77,1(39,49);Job10,3(49,60);Job17,1(60,70);Job57,1(70,80);Job58,1(80,86);Job37,1(86,96);Job80,3(96,107);Job48,6(107,109);Job95,2(109,111);Job18,6(111,113);Job30,3(113,124);Job90,3(124,135);Job98,1(135,141);Job90,1(141,144);Job38,6(144,146);Job58,6(146,148);Job55,2(148,150);Job65,2(150,152) |
| 10 | Job50,1(0,4);Job49,6(4,5);Job64,1(5,6);Job54,1(6,7);Job74,1(7,8);Job9,6(8,9);Job34,1(9,10);Job10,1(10,14);Job95,1(14,26);Job88,1(26,36);Job26,2(36,41);Job44,1(41,42);Job85,1(42,54);Job84,1(54,55);Job24,1(55,56);Job14,1(56,57);Job59,6(57,58);Job40,1(58,62);Job99,5(62,71);Job96,2(71,76);Job99,6(76,77);Job39,6(77,78);Job89,5(78,87);Job79,5(87,96);Job55,1(96,108);Job79,6(108,109);Job36,2(109,114);Job25,1(114,126);Job75,1(126,138);Job65,1(138,150);Job4,1(150,151);Job94,1(151,152) |

Table 2 The new solution of No.29\_1, makespan=18

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job5,3(0,1);Job1,1(1,3);Job1,3(3,4);Job7,1(4,9);Job3,1(9,14);Job2,1(14,16);Job8,3(16,17);Job4,3(17,18) |
| 2 | Job7,2(0,4);Job1,2(4,7);Job6,2(7,10);Job2,2(11,14);Job5,1(14,17) |
| 3 | Job6,3(0,4);Job4,1(4,11);Job6,1(11,16) |
| 4 | Job8,2(0,4);Job5,2(4,6);Job8,1(6,15);Job3,2(15,18) |
| 5 | Job3,3(0,9);Job7,3(9,18) |
| 6 | Job2,3(0,11);Job4,2(11,16) |

Table 3 The new solution of No.29\_2, makespan=60

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job16,3(0,1);Job17,1(1,3);Job5,3(3,4);Job31,3(4,5);Job20,3(5,6);Job17,3(6,7);Job30,1(7,12);Job5,1(12,14);Job13,1(14,16);Job3,1(16,21);Job21,1(21,23);Job27,1(23,28);Job28,3(28,29);Job1,3(29,30);Job24,3(30,31);Job9,3(31,32);Job31,1(32,34);Job25,1(34,36);Job7,1(36,41);Job13,3(41,42);Job28,1(42,44);Job32,1(44,46);Job21,3(46,47);Job25,3(47,48);Job15,1(48,53);Job8,3(53,54);Job12,3(54,55);Job1,1(55,57);Job32,3(57,58);Job29,1(58,60) |
| 2 | Job2,2(0,3);Job26,2(3,6);Job22,2(6,9);Job28,2(9,12);Job19,1(12,18);Job6,2(18,21);Job18,2(21,24);Job30,2(24,28);Job23,1(28,34);Job29,2(34,37);Job27,2(37,41);Job14,2(41,44);Job9,1(44,47);Job10,2(47,50);Job11,1(50,56);Job23,2(56,60) |
| 3 | Job14,3(0,4);Job2,3(4,8);Job29,3(8,12);Job18,3(12,16);Job12,1(16,23);Job22,3(23,27);Job6,3(27,31);Job26,3(31,35);Job16,1(35,42);Job8,1(42,49);Job4,1(49,56);Job10,3(56,60) |
| 4 | Job1,2(0,2);Job31,2(2,4);Job17,2(4,6);Job5,2(6,8);Job20,1(8,17);Job7,2(17,20);Job24,1(20,29);Job20,2(29,33);Job9,2(33,35);Job21,2(35,37);Job13,2(37,39);Job25,2(39,41);Job11,2(41,44);Job16,2(44,48);Job32,2(48,50);Job3,2(50,53);Job15,2(53,56);Job19,2(56,59) |
| 5 | Job26,1(0,2);Job10,1(2,4);Job14,1(4,6);Job23,3(6,15);Job2,1(15,17);Job22,1(17,19);Job18,1(19,21);Job11,3(21,30);Job6,1(31,33);Job3,3(33,42);Job7,3(42,51);Job30,3(51,60) |
| 6 | Job8,2(0,5);Job12,2(5,10);Job4,3(10,13);Job4,2(13,18);Job15,3(18,30);Job19,3(30,42);Job24,2(42,47);Job27,3(47,59) |

Table 4 The new solution of No.29\_3, makespan=123

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job52,3(0,1);Job62,3(1,2);Job2,1(2,4);Job20,3(4,5);Job25,1(5,7);Job16,3(7,8);Job49,1(8,13);Job1,1(13,15);Job32,3(15,16);Job47,1(16,21);Job59,3(21,22);Job53,3(22,23);Job51,3(23,24);Job13,3(24,25);Job62,1(25,27);Job40,3(27,28);Job28,3(28,29);Job18,1(29,31);Job5,1(31,33);Job24,3(33,34);Job55,3(34,35);Job29,3(35,36);Job56,3(36,37);Job3,1(37,42);Job61,3(42,43);Job33,3(43,44);Job9,3(44,45);Job37,3(45,46);Job21,3(46,47);Job54,3(47,48);Job23,1(48,53);Job63,3(53,54);Job54,1(54,56);Job17,3(56,57);Job55,1(57,59);Job60,3(59,60);Job58,3(60,61);Job46,1(61,66);Job22,1(66,68);Job30,1(68,70);Job35,1(70,75);Job29,1(75,77);Job1,3(77,78);Job13,1(78,80);Job37,1(80,82);Job21,1(82,84);Job64,1(84,86);Job57,3(86,87);Job5,3(87,88);Job52,1(88,90);Job61,1(90,92);Job51,1(92,94);Job41,1(94,99);Job38,1(99,101);Job8,3(101,102);Job58,1(102,104);Job4,3(104,105);Job64,3(105,106);Job25,3(106,107);Job36,3(107,108);Job48,1(108,113);Job27,1(113,118);Job43,1(118,123); |
| 2 | Job59,1(0,3);Job14,2(3,6);Job15,1(6,12);Job39,1(12,18);Job26,2(18,21);Job19,1(21,27);Job31,1(27,33);Job6,2(33,36);Job7,1(36,42);Job53,2(42,45);Job17,1(45,48);Job34,2(48,51);Job42,1(51,57);Job58,2(57,60);Job10,2(60,63);Job1,2(63,66);Job53,1(66,69);Job11,1(69,75);Job22,2(75,78);Job45,1(78,84);Job38,2(84,87);Job44,1(87,93);Job15,2(93,97);Job64,2(97,100);Job33,1(100,103);Job50,1(103,109);Job2,2(109,112);Job9,1(112,115);Job30,2(115,118);Job18,2(118,121); |
| 3 | Job63,1(0,4);Job56,1(4,8);Job32,1(8,15);Job30,3(15,19);Job6,3(19,23);Job57,1(23,27);Job2,3(27,31);Job34,3(31,35);Job22,3(35,39);Job26,3(39,43);Job40,1(43,50);Job8,1(50,57);Job16,1(57,64);Job12,3(64,67);Job12,1(67,74);Job38,3(74,78);Job14,3(78,82);Job18,3(82,86);Job20,1(86,93);Job24,1(93,100);Job36,1(100,107);Job10,3(107,111);Job60,1(111,115);Job28,1(115,122); |
| 4 | Job25,2(0,2);Job24,2(2,6);Job27,2(6,9);Job23,2(9,12);Job29,2(12,14);Job56,2(14,16);Job51,2(16,18);Job41,2(18,21);Job45,2(21,24);Job50,2(24,27);Job57,2(27,29);Job37,2(29,31);Job21,2(31,33);Job61,2(33,35);Job48,2(35,38);Job17,2(38,40);Job44,2(40,43);Job3,2(43,46);Job59,2(46,48);Job4,1(48,57);Job63,2(57,59);Job55,2(59,61);Job35,2(61,64);Job39,2(64,67);Job43,2(67,70);Job4,2(70,74);Job46,2(74,77);Job20,2(77,81);Job31,2(81,84);Job62,2(84,86);Job12,2(86,90);Job33,2(90,92);Job13,2(92,94);Job7,2(94,97);Job60,2(97,99);Job5,2(99,101);Job9,2(101,103);Job54,2(103,105);Job52,2(105,107);Job11,2(107,110);Job28,2(110,114);Job47,2(114,117);Job49,2(117,120);Job42,2(120,123); |
| 5 | Job23,3(0,9);Job19,3(9,18);Job10,1(18,20);Job15,3(20,29);Job27,3(29,38);Job31,3(38,47);Job35,3(47,56);Job26,1(56,58);Job6,1(58,60);Job14,1(60,62);Job7,3(62,71);Job34,1(71,73);Job43,3(73,82);Job19,2(82,87);Job42,3(87,96);Job48,3(96,105);Job49,3(105,114);Job3,3(114,123); |
| 6 | Job47,3(0,12);Job16,2(12,17);Job11,3(17,29);Job46,3(29,41);Job50,3(41,53);Job36,2(53,58);Job40,2(58,63);Job32,2(63,68);Job39,3(68,80);Job41,3(80,92);Job8,2(92,97);Job45,3(97,109);Job44,3(109,121); |

Table 5 The new solution of No.29\_4, makespan=197

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job65,3(0,1);Job55,1(1,6);Job56,3(6,7);Job97,3(7,8);Job61,1(8,10);Job19,1(10,15);Job49,1(15,17);Job28,3(17,18);Job64,3(18,19);Job1,3(19,20);Job60,3(20,21);Job11,1(21,26);Job47,1(26,31);Job52,3(31,32);Job33,1(32,34);Job32,3(34,35);Job54,1(35,37);Job37,1(37,39);Job16,3(39,40);Job20,3(40,41);Job93,1(41,43);Job8,3(43,44);Job60,1(44,53);Job13,3(53,54);Job86,1(54,56);Job92,3(56,57);Job89,3(57,58);Job61,3(58,59);Job87,1(59,64);Job90,1(64,66);Job84,3(66,67);Job26,1(67,69);Job93,3(69,70);Job49,3(70,71);Job79,1(71,76);Job41,3(76,77);Job73,1(77,79);Job5,3(79,80);Job76,3(80,81);Job65,1(81,83);Job12,3(83,84);Job4,3(84,85);Job25,3(85,86);Job81,1(86,88);Job59,1(88,93);Job29,3(93,94);Job17,1(94,96);Job77,3(96,97);Job40,3(97,98);Job21,3(98,99);Job48,3(99,100);Job45,1(100,102);Job25,1(102,104);Job45,3(104,105);Job85,1(105,107);Job62,2(107,111);Job81,3(111,112);Job24,3(112,113);Job9,3(113,114);Job72,3(114,115);Job8,1(115,124);Job57,1(124,126);Job13,1(126,128);Job63,1(128,133);Job1,1(133,135);Job17,3(135,136);Job95,1(136,141);Job33,3(141,142);Job73,3(142,143);Job69,3(143,144);Job57,3(144,145);Job68,3(145,146);Job80,3(146,147);Job96,3(147,148);Job97,1(148,150);Job21,1(150,152);Job69,1(152,154);Job66,1(154,156);Job64,1(156,165);Job44,3(165,166);Job100,3(166,167);Job36,3(167,168);Job37,3(168,169);Job72,1(169,178);Job15,1(178,183);Job67,1(183,188);Job39,1(188,193);Job53,3(193,194);Job85,3(194,195);Job53,1(195,197); |
| 2 | Job35,1(0,6);Job21,2(6,9);Job86,2(9,12);Job82,2(12,15);Job30,2(15,18);Job94,2(18,21);Job9,1(21,24);Job31,1(24,30);Job23,1(30,36);Job1,2(36,39);Job26,2(39,42);Job90,2(42,45);Job66,2(45,48);Job54,2(48,51);Job63,2(51,55);Job2,2(55,58);Job42,2(58,61);Job7,1(61,67);Job29,1(67,70);Job39,2(70,74);Job46,2(74,77);Job58,2(77,80);Job3,1(80,86);Job91,2(86,90);Job99,1(90,96);Job50,2(96,99);Job98,2(99,102);Job43,1(102,108);Job71,2(108,112);Job38,2(112,115);Job34,2(115,118);Job78,2(118,121);Job51,1(121,127);Job83,1(127,133);Job71,1(133,139);Job77,1(139,142);Job89,1(142,145);Job91,1(145,151);Job6,2(151,154);Job70,2(154,157);Job75,1(157,163);Job10,2(163,166);Job33,2(166,169);Job41,1(169,172);Job22,2(172,175);Job14,2(175,178);Job5,1(178,181);Job19,2(181,185);Job18,2(185,188);Job27,1(188,194);Job74,2(194,197); |
| 3 | Job88,1(0,7);Job36,1(7,14);Job44,1(14,21);Job6,3(21,25);Job90,3(25,29);Job70,3(29,33);Job2,3(33,37);Job54,3(37,41);Job62,3(41,45);Job34,3(45,49);Job56,1(49,56);Job38,3(56,60);Job46,3(60,64);Job68,1(64,71);Job42,3(71,75);Job74,3(75,79);Job10,3(79,83);Job18,3(83,87);Job88,3(87,90);Job76,1(90,97);Job66,3(97,101);Job86,3(101,105);Job14,3(105,109);Job84,1(109,116);Job98,3(116,120);Job26,3(120,124);Job94,3(124,128);Job82,3(128,132);Job48,1(132,139);Job28,1(139,146);Job78,3(146,150);Job50,3(150,154);Job96,1(154,161);Job32,1(161,168);Job58,3(168,172);Job100,1(172,179);Job20,1(179,186);Job80,1(186,193);Job30,3(193,197); |
| 4 | Job85,2(0,2);Job4,2(2,6);Job40,1(6,15);Job95,2(15,18);Job24,1(18,27);Job7,2(27,30);Job20,2(30,34);Job9,2(34,36);Job45,2(36,38);Job52,1(38,47);Job59,2(47,50);Job65,2(50,52);Job17,2(52,54);Job61,2(54,56);Job97,2(56,58);Job16,1(58,67);Job89,2(67,69);Job3,2(69,72);Job60,2(72,76);Job43,2(76,79);Job37,2(79,81);Job41,2(81,83);Job64,2(83,87);Job31,2(87,90);Job4,1(90,99);Job55,2(99,102);Job69,2(102,104);Job79,2(104,107);Job72,2(107,111);Job13,2(111,113);Job11,2(113,116);Job99,2(116,119);Job40,2(119,123);Job87,2(123,126);Job27,2(126,129);Job67,2(129,132);Job15,2(132,135);Job35,2(135,138);Job5,2(138,140);Job49,2(140,142);Job83,2(142,145);Job12,1(145,154);Job57,2(154,156);Job23,2(156,159);Job73,2(159,161);Job47,2(161,164);Job29,2(164,166);Job77,2(166,168);Job92,1(168,177);Job25,2(177,179);Job51,2(179,182);Job81,2(182,184);Job24,2(184,188);Job52,2(188,192);Job75,2(192,195);Job93,2(195,197); |
| 5 | Job6,1(0,2);Job43,3(2,11);Job71,3(11,20);Job95,3(20,29);Job2,1(29,31);Job38,1(31,33);Job42,1(33,35);Job18,1(35,37);Job74,1(37,39);Job22,1(39,41);Job53,2(41,45);Job94,1(45,47);Job58,1(47,49);Job3,3(49,58);Job98,1(58,60);Job62,1(60,62);Job10,1(62,64);Job78,1(64,66);Job46,1(66,68);Job30,1(68,70);Job50,1(70,72);Job14,1(72,74);Job51,3(74,83);Job70,1(83,85);Job82,1(85,87);Job39,3(87,96);Job23,3(96,105);Job47,3(105,114);Job83,3(114,123);Job99,3(123,132);Job75,3(132,141);Job34,1(141,143);Job15,3(143,152);Job7,3(152,161);Job67,3(161,170);Job55,3(170,179);Job31,3(179,188);Job19,3(188,197); |
| 6 | Job8,2(0,5);Job91,3(5,17);Job100,2(17,22);Job44,2(22,27);Job68,2(27,32);Job63,3(32,44);Job84,2(44,49);Job79,3(49,61);Job80,2(61,66);Job92,2(66,71);Job87,3(71,83);Job27,3(83,95);Job11,3(95,107);Job56,2(107,112);Job36,2(112,117);Job35,3(117,129);Job76,2(129,134);Job12,2(134,139);Job88,2(139,144);Job48,2(144,149);Job28,2(149,154);Job59,3(154,166);Job96,2(166,171);Job22,3(175,186);Job16,2(186,191);Job32,2(191,196); |

Table 6 The new solution of No.29\_5, makespan=321

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job150,1(0,9);Job142,1(9,18);Job72,1(18,27);Job25,1(27,29);Job28,1(29,38);Job104,1(38,47);Job128,1(47,56);Job107,1(56,61);Job87,1(61,66);Job85,1(66,68);Job117,1(68,70);Job61,1(70,72);Job33,1(72,74);Job9,1(74,76);Job30,1(76,78);Job54,1(78,80);Job21,1(80,82);Job69,1(82,84);Job2,1(84,86);Job109,1(86,88);Job57,1(88,90);Job17,1(90,92);Job5,3(92,93);Job60,3(93,94);Job61,3(94,95);Job56,3(95,96);Job109,3(96,97);Job17,3(97,98);Job57,3(98,99);Job101,3(99,100);Job9,3(100,101);Job53,3(101,102);Job52,1(102,111);Job111,1(111,116);Job132,1(116,125);Job92,1(125,134);Job100,1(134,143);Job137,1(143,148);Job99,1(148,153);Job47,1(153,158);Job39,1(158,163);Job103,1(163,168);Job35,1(168,173);Job27,1(173,178);Job91,1(178,183);Job23,1(183,188);Job136,3(188,189);Job132,3(189,190);Job131,1(190,195);Job3,1(195,200);Job83,1(200,205);Job15,1(205,210);Job135,1(210,215);Job19,1(215,220);Job93,3(220,221);Job30,2(221,225);Job73,1(225,227);Job81,1(227,229);Job13,1(229,231);Job77,1(231,233);Job49,1(233,235);Job105,1(235,237);Job82,1(237,239);Job5,1(239,241);Job93,1(241,243);Job113,1(243,245);Job101,1(245,247);Job85,3(247,248);Job37,1(248,250);Job12,3(250,251);Job140,3(251,252);Job52,3(252,253);Job84,3(253,254);Job33,3(254,255);Job76,3(255,256);Job4,3(256,257);Job25,3(257,258);Job134,3(258,259);Job120,3(259,260);Job149,3(260,261);Job150,3(261,262);Job21,3(262,263);Job142,3(263,264);Job72,3(264,265);Job145,3(265,266);Job128,3(266,267);Job105,3(267,268);Job16,3(268,269);Job13,3(269,270);Job80,3(270,271);Job45,3(271,272);Job89,3(272,273);Job69,3(273,274);Job97,3(274,275);Job41,3(275,276);Job92,3(276,277);Job44,3(277,278);Job77,3(278,279);Job73,3(279,280);Job117,3(280,281);Job148,3(281,282);Job1,3(282,283);Job146,3(283,284);Job29,3(284,285);Job40,3(285,286);Job130,3(286,287);Job65,3(287,288);Job49,3(288,289);Job124,3(289,290);Job141,3(290,291);Job55,1(291,296);Job26,1(296,298);Job98,1(298,300);Job89,1(300,302);Job116,3(302,303);Job102,1(303,305);Job112,3(305,306);Job37,3(306,307);Job20,3(307,308);Job12,1(308,317);Job96,3(317,318);Job81,3(318,319);Job104,3(319,320);Job113,3(320,321); |
| 2 | Job133,1(0,6);Job68,2(6,12);Job11,1(12,18);Job148,2(18,24);Job82,2(24,27);Job79,1(27,33);Job139,1(33,39);Job12,2(39,45);Job59,1(45,51);Job79,2(51,55);Job95,2(55,59);Job86,2(59,62);Job66,2(62,65);Job10,2(65,68);Job65,1(68,71);Job90,2(71,74);Job69,2(74,77);Job22,2(77,80);Job63,1(80,86);Job119,1(86,92);Job127,1(92,98);Job67,1(98,104);Job43,1(104,110);Job51,1(110,116);Job129,1(116,122);Job31,1(122,128);Job125,1(128,134);Job71,1(134,140);Job75,1(140,146);Job115,1(146,152);Job121,1(152,158);Job123,1(158,164);Job1,1(164,167);Job56,2(167,173);Job145,2(173,179);Job7,1(179,185);Job95,1(185,191);Job15,2(191,195);Job7,2(195,199);Job55,2(199,203);Job111,2(203,207);Job42,2(207,210);Job121,2(210,214);Job133,2(214,218);Job43,2(218,222);Job75,2(222,226);Job23,2(226,230);Job54,2(230,233);Job78,2(233,236);Job45,1(236,239);Job38,2(239,242);Job102,2(242,245);Job117,2(245,248);Job61,2(248,251);Job14,2(251,254);Job70,2(254,257);Job2,2(257,260);Job34,2(260,263);Job58,2(263,266);Job50,2(266,269);Job18,2(269,272);Job94,2(272,275);Job26,2(275,278);Job97,1(278,281);Job46,2(281,284);Job98,2(284,287);Job106,2(287,290);Job6,2(290,293);Job62,2(293,296);Job97,2(296,299);Job110,2(299,302);Job41,1(302,305);Job74,2(305,308);Job41,2(308,311);Job105,2(311,314);Job118,2(314,317);Job114,2(317,320); |
| 3 | Job141,1(0,7);Job56,1(7,14);Job144,1(14,21);Job68,1(21,28);Job122,1(28,35);Job88,1(35,42);Job108,1(42,49);Job14,3(49,53);Job62,3(53,57);Job10,3(57,61);Job96,1(61,68);Job18,3(68,72);Job54,3(72,76);Job58,3(76,80);Job114,3(80,84);Job86,3(84,88);Job50,3(88,92);Job66,3(92,96);Job48,3(96,99);Job144,3(99,102);Job138,1(102,109);Job16,1(109,116);Job149,1(116,123);Job120,1(123,130);Job40,1(130,137);Job36,1(137,144);Job147,1(144,151);Job24,1(151,158);Job84,1(158,165);Job94,3(165,169);Job32,1(169,176);Job126,1(176,183);Job116,1(183,190);Job143,1(190,197);Job4,1(197,204);Job112,1(204,211);Job44,1(211,218);Job28,3(218,221);Job102,3(221,225);Job6,3(225,229);Job42,3(229,233);Job118,3(233,237);Job26,3(237,241);Job82,3(241,245);Job30,3(245,249);Job110,3(249,253);Job22,3(253,257);Job143,3(257,260);Job2,3(260,264);Job106,3(264,268);Job70,3(268,272);Job53,1(272,276);Job29,1(276,280);Job98,3(280,284);Job46,3(284,288);Job34,3(288,292);Job78,3(292,296);Job38,3(296,300);Job124,1(300,307);Job134,1(307,314);Job90,3(314,318);Job8,3(318,321); |
| 4 | Job48,1(0,9);Job140,1(9,18);Job145,1(18,27);Job8,1(27,36);Job76,1(36,45);Job80,2(45,49);Job112,2(49,53);Job32,2(53,57);Job132,2(57,61);Job40,2(61,65);Job20,2(65,69);Job129,2(69,72);Job19,2(72,75);Job31,2(75,78);Job123,2(78,81);Job137,2(81,84);Job59,2(84,87);Job47,2(87,90);Job53,2(90,92);Job113,2(92,94);Job85,2(94,96);Job57,2(96,98);Job25,2(98,100);Job65,2(100,102);Job80,1(102,111);Job146,1(111,120);Job64,1(120,129);Job60,1(129,138);Job130,1(138,147);Job45,2(147,149);Job148,1(149,158);Job20,1(158,167);Job136,1(167,176);Job134,2(176,180);Job100,2(180,184);Job147,2(184,188);Job96,2(188,192);Job142,2(192,196);Job150,2(196,200);Job143,2(200,204);Job88,2(204,208);Job144,2(208,212);Job140,2(212,216);Job4,2(216,220);Job60,2(220,224);Job138,2(224,228);Job119,2(228,231);Job27,2(231,234);Job83,2(234,237);Job13,2(237,239);Job63,2(239,242);Job109,2(242,244);Job87,2(244,247);Job131,2(247,250);Job115,2(250,253);Job91,2(253,256);Job51,2(256,259);Job3,2(259,262);Job135,2(262,265);Job99,2(265,268);Job39,2(268,271);Job67,2(271,274);Job139,2(274,277);Job11,2(277,280);Job89,2(280,282);Job5,2(282,284);Job33,2(284,286);Job73,2(286,288);Job37,2(288,290);Job21,2(290,292);Job81,2(292,294);Job29,2(294,296);Job77,2(296,298);Job9,2(298,300);Job49,2(300,302);Job17,2(302,304);Job93,2(304,306);Job76,2(306,310);Job107,2(310,313);Job136,2(313,317);Job124,2(317,321); |
| 5 | Job67,3(0,9);Job129,3(9,18);Job83,3(18,27);Job87,3(27,36);Job19,3(36,45);Job47,3(45,54);Job127,2(54,59);Job74,1(59,61);Job18,1(61,63);Job14,1(63,65);Job42,1(65,67);Job70,1(67,69);Job3,3(69,78);Job115,3(78,87);Job107,3(87,96);Job114,1(96,98);Job35,3(98,107);Job22,1(107,109);Job23,3(109,118);Job94,1(118,120);Job111,3(120,129);Job79,3(129,138);Job63,3(138,147);Job103,3(147,156);Job7,3(156,165);Job119,3(165,174);Job15,3(174,183);Job139,3(183,192);Job123,3(192,201);Job39,3(201,210);Job75,3(210,219);Job31,3(219,228);Job131,3(228,237);Job51,3(237,246);Job74,3(246,253);Job125,2(253,258);Job103,2(258,263);Job71,2(263,268);Job35,2(268,273);Job125,3(273,282);Job66,1(282,284);Job106,1(284,286);Job34,1(286,288);Job62,1(288,290);Job58,1(290,292);Job118,1(292,294);Job46,1(294,296);Job86,1(296,298);Job101,2(298,302);Job110,1(302,304);Job6,1(304,306);Job90,1(306,308);Job78,1(308,310);Job38,1(310,312);Job50,1(312,314);Job1,2(314,318);Job10,1(318,320); |
| 6 | Job71,3(0,12);Job59,3(12,24);Job137,3(24,36);Job130,2(36,41);Job122,2(41,46);Job104,2(47,52);Job44,2(52,57);Job28,2(57,62);Job141,2(62,67);Job16,2(67,72);Job108,2(72,77);Job126,2(77,82);Job64,3(82,85);Job138,3(85,88);Job36,3(88,91);Job55,3(91,103);Job95,3(103,115);Job43,3(115,127);Job135,3(127,139);Job133,3(139,151);Job11,3(151,163);Job127,3(163,175);Job99,3(175,187);Job121,3(187,199);Job91,3(199,211);Job146,2(211,216);Job149,2(216,221);Job92,2(221,226);Job24,2(226,231);Job116,2(231,236);Job48,2(236,241);Job128,2(241,246);Job84,2(246,251);Job64,2(251,256);Job52,2(256,261);Job36,2(261,266);Job8,2(266,271);Job147,3(271,274);Job100,3(274,277);Job122,3(277,280);Job88,3(280,283);Job24,3(283,286);Job27,3(286,298);Job32,3(298,301);Job68,3(301,304);Job108,3(304,307);Job72,2(307,312);Job126,3(312,315);Job120,2(315,320); |

Table 7 The new solution of No.29\_6, makespan=407

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job91,1(0,5);Job61,1(5,7);Job61,3(7,8);Job38,1(8,10);Job120,1(10,19);Job31,1(19,24);Job169,1(24,29);Job164,1(29,31);Job11,1(31,36);Job58,1(36,38);Job120,3(38,39);Job45,3(39,40);Job73,3(40,41);Job136,3(41,42);Job60,3(42,43);Job161,1(43,45);Job148,3(45,46);Job179,1(46,48);Job115,1(48,53);Job135,1(53,58);Job187,1(58,63);Job188,3(63,64);Job29,1(64,66);Job157,3(66,67);Job156,3(67,68);Job196,1(68,73);Job73,1(73,75);Job6,1(75,77);Job49,3(77,78);Job163,1(78,83);Job77,1(83,85);Job5,3(85,86);Job94,1(86,88);Job153,3(88,89);Job97,3(89,90);Job57,1(90,92);Job65,1(92,94);Job79,1(94,99);Job48,3(99,100);Job81,1(100,102);Job194,1(102,107);Job46,1(107,109);Job117,1(109,111);Job77,3(111,112);Job199,1(112,117);Job167,1(117,119);Job12,1(119,128);Job101,3(128,129);Job80,3(129,130);Job175,1(130,135);Job71,1(135,140);Job200,1(140,145);Job96,3(145,146);Job59,1(146,151);Job15,1(151,156);Job167,3(156,157);Job90,1(157,159);Job17,1(159,161);Job173,3(161,162);Job121,3(162,163);Job170,3(163,164);Job147,1(164,169);Job54,2(169,173);Job121,1(173,175);Job180,1(175,177);Job107,1(177,182);Job173,1(182,184);Job155,1(184,189);Job103,1(189,194);Job149,1(194,196);Job33,1(196,198);Job105,1(198,200);Job93,1(200,202);Job41,1(202,204);Job130,1(204,206);Job35,1(206,211);Job25,1(211,213);Job182,1(213,215);Job133,3(215,216);Job69,3(216,217);Job25,3(217,218);Job70,2(218,222);Job185,1(222,224);Job100,3(224,225);Job13,1(225,227);Job50,1(227,229);Job161,3(229,230);Job128,3(230,231);Job1,3(231,232);Job136,1(232,241);Job3,1(241,246);Job188,1(246,248);Job89,3(248,249);Job26,1(249,251);Job37,3(251,252);Job152,3(252,253);Job176,1(253,255);Job9,3(255,256);Job62,1(256,258);Job45,1(258,260);Job1,1(260,262);Job129,3(262,263);Job150,1(263,265);Job105,3(265,266);Job24,3(266,267);Job33,3(267,268);Job127,1(268,273);Job99,1(273,278);Job129,1(278,280);Job57,3(280,281);Job101,1(281,283);Job40,3(283,284);Job52,3(284,285);Job104,3(285,286);Job142,1(286,288);Job67,1(288,293);Job89,1(293,295);Job179,3(295,296);Job12,3(296,297);Job13,3(297,298);Job9,1(298,300);Job85,3(300,301);Job157,1(301,303);Job141,3(303,304);Job109,3(304,305);Job119,1(305,310);Job190,1(310,315);Job125,1(315,317);Job63,1(317,322);Job93,3(322,323);Job87,1(323,328);Job160,3(328,329);Job137,1(329,331);Job153,1(331,333);Job144,3(333,334);Job7,1(334,339);Job85,1(339,341);Job134,1(341,343);Job65,3(343,344);Job149,3(344,345);Job145,1(345,347);Job113,1(347,349);Job41,3(349,350);Job137,3(350,351);Job126,2(351,355);Job76,3(355,356);Job182,3(356,357);Job185,3(357,358);Job117,3(358,359);Job176,3(359,360);Job88,3(360,361);Job112,3(361,362);Job56,3(362,363);Job132,3(363,364);Job16,3(364,365);Job125,3(365,366);Job164,3(366,367);Job53,1(367,369);Job75,1(369,374);Job43,1(374,379);Job184,1(379,384);Job53,3(384,385);Job49,1(385,387);Job17,3(387,388);Job29,3(388,389);Job84,3(389,390);Job113,3(390,391);Job21,3(391,392);Job133,1(392,394);Job4,3(394,395);Job21,1(395,397);Job92,3(397,398);Job51,1(398,403);Job170,1(403,405);Job81,3(405,406);Job36,3(406,407); |
| 2 | Job180,2(0,3);Job134,2(3,6);Job95,1(6,12);Job26,2(12,15);Job107,2(15,19);Job191,1(19,25);Job42,2(25,28);Job181,1(28,34);Job151,2(34,38);Job168,2(38,41);Job145,3(41,45);Job114,2(45,48);Job139,1(48,54);Job159,1(54,60);Job19,1(60,66);Job47,1(66,72);Job193,1(72,78);Job174,2(78,81);Job83,1(81,87);Job62,2(87,90);Job195,1(90,96);Job55,1(96,102);Job91,2(102,106);Job197,1(106,112);Job30,2(112,115);Job99,2(115,119);Job151,1(119,125);Job39,1(125,131);Job163,2(131,135);Job102,2(135,138);Job75,2(138,142);Job147,2(142,146);Job182,2(146,149);Job2,2(149,152);Job71,2(152,156);Job158,2(156,159);Job47,2(160,164);Job111,1(164,170);Job97,1(170,173);Job85,2(173,176);Job21,2(176,179);Job22,2(179,182);Job123,1(182,188);Job78,2(188,191);Job171,2(191,194);Job98,2(194,197);Job113,2(197,200);Job38,2(200,203);Job27,1(203,209);Job59,2(209,213);Job10,2(213,216);Job131,1(216,222);Job138,2(222,225);Job195,2(225,229);Job18,2(229,232);Job86,2(232,235);Job55,2(235,239);Job189,2(239,242);Job49,2(242,245);Job146,2(245,248);Job166,1(248,254);Job141,2(254,257);Job94,2(257,260);Job23,1(260,266);Job117,2(266,269);Job110,2(269,272);Job50,2(272,275);Job178,1(275,281);Job15,2(281,285);Job41,2(285,288);Job142,2(288,291);Job118,2(291,294);Job69,1(294,297);Job172,1(297,303);Job90,2(303,306);Job45,2(306,309);Job122,2(309,312);Job130,2(312,315);Job82,2(315,318);Job14,2(318,321);Job186,2(321,324);Job6,2(324,327);Job150,2(327,330);Job121,2(330,333);Job183,2(333,336);Job141,1(336,339);Job177,2(339,342);Job198,1(342,348);Job74,2(348,351);Job154,2(351,354);Job162,2(354,357);Job66,2(357,360);Job37,1(360,363);Job58,2(363,366);Job46,2(366,369);Job16,2(369,375);Job106,2(375,378);Job143,1(378,384);Job44,2(384,390);Job34,2(390,393);Job165,2(393,396);Job192,1(396,402);Job9,2(402,405); |
| 3 | Job172,3(0,13);Job32,1(13,20);Job196,3(20,33);Job114,3(33,37);Job124,1(37,44);Job124,3(44,47);Job134,3(47,51);Job8,1(51,58);Job140,1(58,65);Job68,3(65,68);Job158,3(68,72);Job92,1(72,79);Job36,1(79,86);Job156,1(86,93);Job16,1(93,100);Job128,1(100,107);Job160,1(107,114);Job116,1(114,121);Job70,3(121,125);Job82,3(125,129);Job148,1(129,136);Job186,3(136,140);Job24,1(140,147);Job18,3(147,151);Job4,1(151,158);Job64,1(158,165);Job174,3(165,169);Job150,3(169,173);Job154,3(173,177);Job165,3(177,181);Job189,3(181,185);Job38,3(185,189);Job58,3(189,193);Job109,1(193,197);Job42,3(197,201);Job142,3(201,205);Job94,3(205,209);Job108,1(209,216);Job152,1(216,223);Job46,3(223,227);Job54,3(227,231);Job80,1(231,238);Job60,1(238,245);Job104,1(245,252);Job62,3(252,256);Job168,3(256,260);Job162,3(260,264);Job106,3(264,268);Job50,3(268,272);Job138,3(272,276);Job98,3(276,280);Job28,1(280,287);Job6,3(287,291);Job34,3(291,295);Job86,3(295,299);Job2,3(299,303);Job30,3(303,307);Job110,3(307,311);Job171,3(311,315);Job5,1(315,319);Job180,3(319,323);Job122,3(323,327);Job102,3(327,331);Job56,1(331,338);Job26,3(338,342);Job48,1(342,349);Job112,1(349,356);Job90,3(356,360);Job177,3(360,364);Job14,3(364,368);Job66,3(368,372);Job126,3(372,376);Job183,3(376,380);Job130,3(380,384);Job78,3(384,388);Job10,3(388,392);Job64,3(392,395);Job118,3(395,399);Job22,3(399,403);Job74,3(403,407); |
| 4 | Job56,2(0,4);Job140,2(4,8);Job144,1(8,17);Job132,1(17,26);Job63,2(26,29);Job40,1(29,38);Job149,2(38,40);Job101,2(40,42);Job67,2(42,45);Job24,2(45,49);Job76,1(49,58);Job116,2(58,62);Job100,1(62,71);Job96,1(71,80);Job89,2(80,82);Job40,2(82,86);Job3,2(86,89);Job52,1(89,98);Job20,1(98,107);Job196,2(107,110);Job72,1(110,119);Job194,2(119,122);Job131,2(122,125);Job184,2(125,128);Job57,2(128,130);Job137,2(130,132);Job68,1(132,141);Job79,2(141,144);Job192,2(144,147);Job88,2(147,151);Job87,2(151,154);Job64,2(154,158);Job44,1(158,167);Job93,2(167,169);Job31,2(169,172);Job200,2(172,175);Job73,2(175,177);Job193,2(177,180);Job96,2(180,184);Job176,2(184,186);Job125,2(186,188);Job17,2(188,190);Job185,2(190,192);Job143,2(192,195);Job135,2(195,198);Job33,2(198,200);Job12,2(200,204);Job52,2(204,208);Job51,2(208,211);Job181,2(211,214);Job88,1(214,223);Job170,2(223,225);Job108,2(225,229);Job175,2(229,232);Job144,2(232,236);Job92,2(236,240);Job32,2(240,244);Job191,2(244,247);Job197,2(247,250);Job139,2(250,253);Job173,2(253,255);Job127,2(255,258);Job169,2(258,261);Job123,2(261,264);Job199,2(264,267);Job83,2(267,270);Job179,2(270,272);Job148,2(272,276);Job120,2(276,280);Job27,2(280,283);Job103,2(283,286);Job23,2(286,289);Job76,2(289,293);Job111,2(293,296);Job187,2(296,299);Job60,2(299,303);Job166,2(303,306);Job19,2(306,309);Job133,2(309,311);Job84,2(311,315);Job155,2(315,318);Job190,2(318,321);Job159,2(321,324);Job172,2(324,327);Job109,2(327,329);Job13,2(329,331);Job77,2(331,333);Job161,2(333,335);Job25,2(335,337);Job29,2(337,339);Job81,2(339,341);Job36,2(341,345);Job53,2(345,347);Job7,2(347,350);Job198,2(350,353);Job129,2(353,355);Job65,2(355,357);Job84,1(357,366);Job61,2(366,368);Job164,2(368,370);Job35,2(370,373);Job4,2(373,377);Job39,2(377,380);Job157,2(380,382);Job97,2(382,384);Job178,2(384,387);Job145,2(387,389);Job43,2(389,392);Job112,2(392,396);Job1,2(396,398);Job153,2(398,400);Job105,2(400,402);Job37,2(402,404);Job95,2(404,407); |
| 5 | Job23,3(0,9);Job110,1(9,11);Job175,3(11,20);Job27,3(20,29);Job86,1(29,31);Job2,1(31,33);Job158,1(33,35);Job122,1(35,37);Job139,3(37,46);Job78,1(46,48);Job66,1(48,50);Job191,3(50,59);Job183,1(59,61);Job14,1(61,63);Job71,3(63,72);Job119,3(72,81);Job190,3(81,90);Job18,1(90,92);Job51,3(92,101);Job126,1(101,103);Job11,2(103,108);Job34,1(108,110);Job119,2(110,115);Job193,3(115,124);Job103,3(124,133);Job118,1(133,135);Job55,3(135,144);Job111,3(144,153);Job151,3(153,162);Job63,3(162,171);Job69,2(171,175);Job7,3(175,184);Job30,1(184,186);Job87,3(186,195);Job177,1(195,197);Job74,1(197,199);Job189,1(199,201);Job115,3(201,210);Job146,1(210,212);Job70,1(212,214);Job11,3(214,223);Job115,2(223,228);Job42,1(228,230);Job165,1(230,232);Job114,1(232,234);Job10,1(234,236);Job186,1(236,238);Job98,1(238,240);Job138,1(240,242);Job54,1(242,244);Job174,1(244,246);Job5,2(246,250);Job102,1(250,252);Job82,1(252,254);Job167,2(254,258);Job22,1(258,260);Job168,1(260,262);Job188,2(262,266);Job194,3(266,275);Job159,3(275,284);Job154,1(284,286);Job162,1(286,288);Job181,3(288,297);Job106,1(297,299);Job15,3(299,308);Job198,3(308,317);Job184,3(317,326);Job147,3(326,335);Job107,3(335,344);Job169,3(344,353);Job3,3(353,362);Job143,3(362,371);Job59,3(371,380);Job95,3(380,389);Job135,3(389,398);Job171,1(398,400);Job146,3(400,407); |
| 6 | Job67,3(0,12);Job68,2(12,17);Job140,3(17,20);Job80,2(20,25);Job31,3(25,37);Job19,3(37,49);Job44,3(49,52);Job123,3(52,64);Job75,3(64,76);Job199,3(76,88);Job32,3(88,91);Job116,3(91,94);Job108,3(94,97);Job166,3(97,109);Job20,3(109,112);Job200,3(112,124);Job35,3(124,136);Job43,3(136,148);Job47,3(148,160);Job99,3(160,172);Job104,2(172,177);Job28,3(177,180);Job100,2(180,185);Job187,3(185,197);Job131,3(197,209);Job28,2(209,214);Job91,3(214,226);Job163,3(226,238);Job72,3(238,241);Job178,3(241,253);Job8,2(253,258);Job195,3(258,270);Job192,3(270,282);Job128,2(282,287);Job136,2(287,292);Job8,3(292,295);Job39,3(295,307);Job79,3(307,319);Job124,2(319,324);Job156,2(324,329);Job155,3(329,341);Job20,2(341,346);Job72,2(346,351);Job83,3(351,363);Job160,2(363,368);Job197,3(368,380);Job48,2(380,385);Job152,2(385,390);Job127,3(390,402);Job132,2(402,407); |

Table 8 The new solution of No.29\_7, makespan=590

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job69,3(0,1);Job193,1(1,3);Job260,3(3,4);Job64,3(4,5);Job9,3(5,6);Job104,3(6,7);Job31,1(7,12);Job160,3(12,13);Job156,3(13,14);Job15,1(14,19);Job4,1(19,28);Job111,1(28,33);Job189,3(33,34);Job73,1(34,36);Job241,3(36,37);Job50,1(37,39);Job275,1(39,44);Job137,1(44,46);Job141,1(46,48);Job177,3(48,49);Job289,3(49,50);Job76,3(50,51);Job217,3(51,52);Job287,3(52,53);Job117,3(53,54);Job102,2(54,58);Job133,1(58,60);Job73,3(60,61);Job65,1(61,63);Job92,3(63,64);Job131,1(64,69);Job270,2(69,73);Job117,1(73,75);Job107,1(75,80);Job39,1(80,85);Job220,3(85,86);Job85,1(86,88);Job182,2(88,92);Job244,3(92,93);Job13,3(93,94);Job136,3(94,95);Job225,3(95,96);Job248,3(96,97);Job112,1(97,106);Job116,3(106,107);Job44,3(107,108);Job69,1(108,110);Job225,1(110,112);Job61,3(112,113);Job264,3(113,114);Job101,1(114,116);Job274,1(116,118);Job97,3(118,119);Job103,1(119,124);Job105,1(124,126);Job204,3(126,127);Job293,1(127,129);Job20,3(129,130);Job84,3(130,131);Job232,1(131,140);Job267,1(140,145);Job290,2(145,149);Job224,3(149,150);Job89,3(150,151);Job236,3(151,152);Job93,3(152,153);Job161,1(153,155);Job33,3(155,156);Job100,1(156,165);Job37,3(165,166);Job113,3(166,167);Job133,3(167,168);Job29,3(168,169);Job191,1(169,174);Job89,1(174,176);Job277,1(176,178);Job203,1(178,183);Job85,3(183,184);Job119,1(184,189);Job8,3(189,190);Job17,1(190,192);Job88,3(192,193);Job265,1(193,195);Job33,1(195,197);Job140,3(197,198);Job161,3(198,199);Job185,3(199,200);Job199,1(200,205);Job293,3(205,206);Job239,1(206,211);Job183,1(211,216);Job180,3(216,217);Job257,3(217,218);Job162,2(218,222);Job273,1(222,224);Job29,1(224,226);Job61,1(226,228);Job108,3(228,229);Job283,3(229,230);Job65,3(230,231);Job3,1(231,236);Job128,3(236,237);Job165,3(237,238);Job273,3(238,239);Job16,3(239,240);Job113,1(240,242);Job237,3(242,243);Job201,3(243,244);Job159,1(244,249);Job228,3(249,250);Job268,3(250,251);Job142,1(251,253);Job19,1(253,258);Job201,1(258,260);Job233,1(260,262);Job67,1(262,267);Job256,3(267,268);Job255,1(268,273);Job228,1(273,282);Job105,3(282,283);Job55,1(283,288);Job189,1(288,290);Job229,3(290,291);Job145,3(291,292);Job299,3(292,293);Job87,1(293,298);Job167,1(298,303);Job49,3(303,304);Job221,3(304,305);Job249,1(305,307);Job41,3(307,308);Job106,1(308,310);Job205,1(310,312);Job187,1(312,317);Job26,2(317,321);Job96,3(321,322);Job58,2(322,326);Job121,1(326,328);Job127,1(328,333);Job265,3(333,334);Job152,3(334,335);Job253,3(335,336);Job286,2(336,340);Job209,3(340,341);Job215,1(341,346);Job232,3(346,347);Job245,1(347,349);Job82,1(349,351);Job281,1(351,353);Job123,1(353,358);Job246,1(358,360);Job297,1(360,362);Job196,3(362,363);Job269,1(363,365);Job227,1(365,370);Job6,1(370,372);Job48,3(372,373);Job145,1(373,375);Job181,3(375,376);Job143,1(376,381);Job66,1(381,383);Job261,1(383,385);Job43,1(385,390);Job21,3(390,391);Job295,3(391,392);Job1,1(392,394);Job277,3(394,395);Job176,3(395,396);Job129,1(396,398);Job45,1(398,400);Job101,3(400,401);Job28,3(401,402);Job132,3(402,403);Job245,3(403,404);Job192,3(404,405);Job233,3(405,406);Job254,1(406,408);Job95,1(408,413);Job72,1(413,422);Job1,3(422,423);Job57,3(423,424);Job53,1(424,426);Job285,3(426,427);Job99,1(427,432);Job172,3(432,433);Job81,3(433,434);Job24,3(434,435);Job126,1(435,437);Job129,3(437,438);Job125,3(438,439);Job253,1(439,441);Job269,3(441,442);Job154,1(442,444);Job79,1(444,449);Job261,3(449,450);Job249,3(450,451);Job49,1(451,453);Job141,3(453,454);Job193,3(454,455);Job124,3(455,456);Job213,3(456,457);Job52,3(457,458);Job295,1(458,460);Job81,1(460,462);Job115,1(462,467);Job137,3(467,468);Job17,3(468,469);Job184,3(469,470);Job299,1(470,472);Job200,3(472,473);Job197,3(473,474);Job149,1(474,476);Job21,1(476,478);Job270,1(478,480);Job138,1(480,482);Job216,3(482,483);Job209,1(483,485);Job252,3(485,486);Job109,3(486,487);Job5,3(487,488);Job4,3(488,489);Job181,1(489,491);Job121,3(491,492);Job51,1(492,497);Job77,3(497,498);Job120,3(498,499);Job281,3(499,500);Job98,1(500,502);Job231,1(502,507);Job144,3(507,508);Job285,1(508,510);Job297,3(510,511);Job16,1(511,520);Job63,1(520,525);Job153,3(525,526);Job169,1(526,528);Job54,1(528,530);Job229,1(530,532);Job112,3(532,533);Job247,1(533,538);Job25,3(538,539);Job71,1(539,544);Job205,3(544,545);Job157,3(545,546);Job47,1(546,551);Job259,1(551,556);Job291,3(556,557);Job136,1(557,566);Job37,1(566,568);Job118,2(568,572);Job257,1(572,574);Job53,3(574,575);Job68,3(575,576);Job188,3(576,577);Job45,3(577,578);Job173,3(578,579);Job100,3(579,580);Job25,1(580,582);Job157,1(582,584);Job279,1(584,589);Job169,3(589,590); |
| 2 | Job288,2(0,3);Job287,1(3,6);Job22,2(6,9);Job77,1(9,12);Job151,2(12,16);Job179,1(16,22);Job93,1(22,25);Job284,2(25,28);Job187,2(28,32);Job7,1(32,38);Job91,1(38,44);Job287,2(44,47);Job13,1(47,50);Job2,2(50,53);Job153,1(53,56);Job30,2(56,59);Job300,2(59,62);Job211,1(62,68);Job54,2(68,71);Job11,1(71,77);Job115,2(77,81);Job255,2(81,85);Job34,2(85,88);Job57,2(88,91);Job75,2(91,95);Job171,1(95,101);Job149,3(101,105);Job186,2(105,108);Job101,2(108,111);Job283,1(111,114);Job202,2(114,117);Job62,2(117,120);Job258,2(120,123);Job291,2(123,126);Job151,1(126,132);Job245,2(132,135);Job47,2(135,139);Job217,1(139,142);Job292,2(142,145);Job14,2(145,148);Job114,2(148,151);Job221,2(151,154);Job146,2(154,157);Job222,2(157,160);Job6,2(160,163);Job35,1(163,169);Job178,2(169,172);Job226,2(172,175);Job110,2(175,178);Job106,2(178,181);Job65,2(181,184);Job90,2(184,187);Job242,2(187,190);Job213,1(190,193);Job296,2(193,196);Job23,1(196,202);Job42,2(202,205);Job230,2(205,208);Job59,1(208,214);Job135,1(214,220);Job1,2(220,223);Job195,1(223,229);Job211,2(229,233);Job171,2(233,237);Job254,2(237,240);Job221,1(240,243);Job82,2(243,246);Job294,2(246,249);Job241,1(249,252);Job206,2(252,255);Job177,1(255,258);Job138,2(258,261);Job27,1(261,267);Job5,2(267,270);Job98,2(270,273);Job86,2(273,276);Job139,1(276,282);Job165,1(282,285);Job166,2(286,289);Job53,2(289,292);Job125,1(292,295);Job298,2(295,298);Job243,1(298,304);Job272,2(304,310);Job266,2(310,313);Job279,2(313,317);Job233,2(317,320);Job214,2(320,323);Job83,1(323,329);Job197,1(329,332);Job289,1(332,335);Job91,2(335,339);Job9,1(339,342);Job205,2(342,345);Job297,2(345,348);Job213,2(348,351);Job275,2(351,355);Job173,1(355,358);Job263,1(358,364);Job207,1(364,370);Job218,2(370,373);Job190,2(373,376);Job207,2(376,380);Job122,2(380,383);Job134,2(383,386);Job74,2(386,389);Job163,1(389,395);Job250,2(395,398);Job246,2(398,401);Job175,1(401,407);Job75,1(407,413);Job126,2(413,416);Job41,1(416,419);Job38,2(419,422);Job94,2(422,425);Job10,2(425,428);Job39,2(428,432);Job234,2(432,435);Job153,2(435,438);Job229,2(438,441);Job70,2(441,444);Job262,2(444,447);Job154,2(447,450);Job251,1(450,456);Job61,2(456,459);Job215,2(459,463);Job223,1(463,469);Job185,1(469,472);Job210,2(472,475);Job235,1(475,481);Job282,2(481,484);Job40,2(484,490);Job194,2(490,493);Job238,2(493,496);Job15,2(496,500);Job268,2(500,506);Job170,2(506,509);Job50,2(509,512);Job198,2(512,515);Job18,2(515,518);Job147,1(518,524);Job158,2(524,527);Job142,2(527,530);Job278,2(530,533);Job155,1(533,539);Job130,2(539,542);Job107,2(542,546);Job174,2(546,549);Job150,2(549,552);Job72,2(552,558);Job227,2(558,562);Job78,2(562,565);Job66,2(565,568);Job46,2(568,571);Job219,1(571,577);Job271,1(577,583);Job295,2(583,586);Job291,1(586,589); |
| 3 | Job196,1(0,7);Job258,3(7,11);Job194,3(11,15);Job188,1(15,22);Job86,3(22,26);Job2,3(26,30);Job88,1(30,37);Job24,1(37,44);Job274,3(44,48);Job260,1(48,55);Job144,1(55,62);Job46,3(62,66);Job262,3(66,70);Job124,1(70,77);Job282,3(77,81);Job206,3(81,85);Job58,3(85,89);Job42,3(89,93);Job200,1(93,100);Job118,3(100,104);Job208,1(104,111);Job70,3(111,115);Job234,3(115,119);Job156,1(119,126);Job97,1(126,130);Job286,3(130,134);Job158,3(134,138);Job6,3(138,142);Job270,3(142,146);Job184,1(146,153);Job22,3(153,157);Job150,3(157,161);Job82,3(161,165);Job34,3(165,169);Job238,3(169,173);Job240,1(173,180);Job84,1(180,187);Job290,3(187,191);Job164,3(191,194);Job170,3(194,198);Job262,1(198,203);Job226,3(203,207);Job148,1(207,214);Job254,3(214,218);Job242,3(218,222);Job102,3(222,226);Job60,1(226,233);Job222,3(233,237);Job110,3(237,241);Job214,3(241,245);Job62,3(245,249);Job216,1(249,256);Job250,3(256,260);Job56,1(260,267);Job122,3(267,271);Job236,1(271,278);Job212,1(278,285);Job98,3(285,289);Job162,3(289,293);Job78,3(293,297);Job132,1(297,304);Job30,3(304,308);Job126,3(308,312);Job120,1(312,319);Job266,3(319,323);Job192,1(323,330);Job182,3(330,334);Job186,3(334,338);Job134,3(338,342);Job296,3(342,346);Job138,3(346,350);Job116,1(350,357);Job32,1(357,364);Job210,3(364,368);Job36,1(368,375);Job54,3(375,379);Job20,1(379,386);Job300,3(386,390);Job252,1(390,397);Job264,1(397,404);Job208,3(404,407);Job106,3(407,411);Job50,3(411,415);Job276,1(415,422);Job160,1(422,429);Job5,1(429,433);Job298,3(433,437);Job140,1(437,444);Job90,3(444,448);Job74,3(448,452);Job168,1(452,459);Job288,3(459,463);Job164,1(463,470);Job146,3(470,474);Job292,3(474,478);Job204,1(478,485);Job178,3(485,489);Job202,3(489,493);Job57,1(493,497);Job18,3(497,501);Job246,3(501,505);Job284,3(505,509);Job174,3(509,513);Job190,3(513,517);Job237,1(517,521);Job14,3(521,525);Job154,3(525,529);Job92,1(529,536);Job278,3(536,540);Job38,3(540,544);Job218,3(544,548);Job109,1(548,552);Job130,3(552,556);Job26,3(556,560);Job166,3(560,564);Job96,1(564,571);Job28,1(571,578);Job142,3(578,582);Job94,3(582,586);Job114,3(586,590); |
| 4 | Job152,1(0,9);Job76,2(9,13);Job169,2(13,15);Job8,2(15,19);Job244,2(19,23);Job11,2(23,26);Job69,2(26,28);Job249,2(28,30);Job231,2(30,33);Job241,2(33,35);Job243,2(35,38);Job49,2(38,40);Job19,2(40,43);Job256,1(43,52);Job177,2(52,54);Job60,2(54,58);Job80,2(58,62);Job116,2(62,66);Job237,2(66,68);Job48,1(68,77);Job272,1(77,86);Job172,1(86,95);Job93,2(95,97);Job141,2(97,99);Job25,2(99,101);Job73,2(101,103);Job23,2(103,106);Job299,2(106,108);Job104,2(108,112);Job68,1(112,121);Job239,2(121,124);Job121,2(124,126);Job108,1(126,135);Job56,2(135,139);Job117,2(139,141);Job189,2(141,143);Job17,2(143,145);Job87,2(145,148);Job220,2(148,152);Job281,2(152,154);Job175,2(154,157);Job161,2(157,159);Job105,2(159,161);Job143,2(161,164);Job167,2(164,167);Job247,2(167,170);Job224,1(170,179);Job253,2(179,181);Job251,2(181,184);Job263,2(184,187);Job51,2(187,190);Job40,1(190,199);Job204,2(199,203);Job180,1(203,212);Job164,2(212,216);Job12,2(216,220);Job147,2(220,223);Job76,1(223,232);Job100,2(232,236);Job97,2(236,238);Job95,2(238,241);Job67,2(241,244);Job132,2(244,248);Job81,2(248,250);Job280,1(250,259);Job99,2(259,262);Job24,2(262,266);Job135,2(266,269);Job191,2(269,272);Job125,2(272,274);Job220,1(274,283);Job185,2(283,285);Job59,2(285,288);Job131,2(288,291);Job163,2(291,294);Job149,2(294,296);Job201,2(296,298);Job261,2(298,300);Job33,2(300,302);Job29,2(302,304);Job80,1(304,313);Job109,2(313,315);Job9,2(315,317);Job273,2(317,319);Job41,2(319,321);Job88,2(321,325);Job52,2(325,329);Job159,2(329,332);Job85,2(332,334);Job20,2(334,338);Job68,2(338,342);Job256,2(342,346);Job208,2(346,350);Job277,2(350,352);Job179,2(352,355);Job36,2(355,359);Job128,1(359,368);Job55,2(368,371);Job79,2(371,374);Job216,2(374,378);Job285,2(378,380);Job289,2(380,382);Job293,2(382,384);Job271,2(384,387);Job96,2(387,391);Job283,2(391,393);Job181,2(393,395);Job48,2(395,399);Job84,2(399,403);Job83,2(403,406);Job64,1(406,415);Job265,2(415,417);Job8,1(417,426);Job176,1(426,435);Job3,2(435,438);Job248,1(438,447);Job197,2(447,449);Job45,2(449,451);Job119,2(451,454);Job157,2(454,456);Job209,2(456,458);Job129,2(458,460);Job113,2(460,462);Job89,2(462,464);Job228,2(464,468);Job133,2(468,470);Job77,2(470,472);Job244,1(472,481);Job195,2(481,484);Job173,2(484,486);Job35,2(486,489);Job21,2(489,491);Job139,2(491,494);Job257,2(494,496);Job104,1(496,505);Job219,2(505,508);Job137,2(508,510);Job12,1(510,519);Job27,2(519,522);Job44,1(522,531);Job235,2(531,534);Job120,2(534,538);Job31,2(538,541);Job7,2(541,544);Job13,2(544,546);Job268,1(546,555);Job223,2(555,558);Job269,2(558,560);Job152,2(560,564);Job165,2(564,566);Job225,2(566,568);Job37,2(568,570);Job52,1(570,579);Job71,2(579,582);Job203,2(582,585);Job111,2(585,588);Job217,2(588,590); |
| 5 | Job86,1(0,2);Job62,1(2,4);Job239,3(4,13);Job110,1(13,15);Job288,1(15,17);Job123,3(17,26);Job15,3(26,35);Job42,1(35,37);Job199,2(37,42);Job190,1(42,44);Job95,3(44,53);Job175,3(53,62);Job114,1(62,64);Job10,3(64,71);Job10,1(71,73);Job75,3(73,82);Job230,1(82,84);Job207,3(84,93);Job243,3(93,102);Job63,2(102,107);Job230,3(107,114);Job58,1(114,116);Job146,1(116,118);Job290,1(118,120);Job182,1(120,122);Job102,1(122,124);Job267,3(124,133);Job103,2(133,138);Job131,3(138,147);Job118,1(147,149);Job127,2(149,154);Job187,3(154,163);Job298,1(163,165);Job255,3(165,174);Job170,1(174,176);Job171,3(176,185);Job259,2(185,190);Job74,1(190,192);Job231,3(192,201);Job174,1(201,203);Job186,1(203,205);Job195,3(205,214);Job214,1(214,216);Job258,1(216,218);Job55,3(218,227);Job183,2(227,232);Job194,1(232,234);Job134,1(234,236);Job38,1(236,238);Job198,1(238,240);Job218,1(240,242);Job191,3(242,251);Job226,1(251,253);Job119,3(253,262);Job158,1(262,264);Job211,3(264,273);Job242,1(273,275);Job99,3(275,284);Job166,1(284,286);Job178,1(286,288);Job296,1(288,290);Job90,1(290,292);Job46,1(292,294);Job111,3(294,303);Job78,1(303,305);Job43,2(305,310);Job294,3(310,317);Job263,3(317,326);Job199,3(326,335);Job66,3(335,342);Job155,3(342,351);Job34,1(351,353);Job130,1(353,355);Job282,1(355,357);Job70,1(357,359);Job286,1(359,361);Job91,3(361,370);Job294,1(370,372);Job22,1(372,374);Job206,1(374,376);Job203,3(376,385);Job151,3(385,394);Job43,3(394,403);Job250,1(403,405);Job103,3(405,414);Job30,1(414,416);Job162,1(416,418);Job79,3(418,427);Job219,3(427,436);Job267,2(436,441);Job18,1(441,443);Job94,1(443,445);Job31,3(445,454);Job300,1(454,456);Job292,1(456,458);Job284,1(458,460);Job155,2(460,465);Job135,3(465,474);Job145,2(474,478);Job150,1(478,480);Job274,2(480,486);Job183,3(486,495);Job238,1(496,498);Job234,1(498,500);Job122,1(500,502);Job87,3(502,511);Job67,3(511,520);Job23,3(520,529);Job215,3(529,538);Job259,3(538,547);Job14,1(547,549);Job147,3(549,558);Job210,1(558,560);Job123,2(560,565);Job202,1(565,567);Job2,1(567,569);Job266,1(569,571);Job143,3(571,580);Job193,2(580,584);Job222,1(584,586);Job278,1(586,588);Job26,1(588,590); |
| 6 | Job172,2(0,5);Job16,2(5,10);Job28,2(10,15);Job3,3(15,27);Job212,3(27,30);Job40,3(30,33);Job148,3(33,36);Job235,3(36,48);Job223,3(48,60);Job47,3(60,72);Job247,3(72,84);Job7,3(84,96);Job115,3(96,108);Job264,2(108,113);Job248,2(113,118);Job167,3(118,130);Job227,3(130,142);Job11,3(142,154);Job136,2(154,159);Job63,3(159,171);Job260,2(171,176);Job188,2(176,181);Job59,3(181,193);Job196,2(193,198);Job160,2(198,203);Job200,2(203,208);Job71,3(208,220);Job139,3(220,232);Job159,3(232,244);Job140,2(244,249);Job212,2(249,254);Job179,3(254,266);Job168,2(266,271);Job180,2(271,276);Job240,3(276,279);Job232,2(279,284);Job107,3(284,296);Job92,2(296,301);Job276,3(301,304);Job144,2(304,309);Job44,2(309,314);Job64,2(314,319);Job39,3(319,331);Job280,3(331,334);Job27,3(334,346);Job32,2(346,351);Job176,2(351,356);Job279,3(356,368);Job184,2(368,373);Job128,2(373,378);Job36,3(378,381);Job32,3(381,384);Job148,2(384,389);Job83,3(389,401);Job236,2(401,406);Job252,2(406,411);Job275,3(411,423);Job198,3(423,434);Job4,2(434,439);Job224,2(439,444);Job51,3(444,456);Job163,3(456,468);Job124,2(468,473);Job192,2(473,478);Job12,3(478,481);Job127,3(481,493);Job56,3(493,496);Job272,3(496,499);Job112,2(499,504);Job168,3(504,507);Job60,3(507,510);Job108,2(510,515);Job251,3(515,527);Job80,3(527,530);Job35,3(530,542);Job156,2(542,547);Job271,3(547,559);Job19,3(559,571);Job280,2(571,576);Job240,2(576,581);Job276,2(581,586);Job72,3(586,589); |

Table 9 The new solution of No.29\_8, makespan=825

|  |  |
| --- | --- |
| Machine | The time of job operation: Job *i*, *j* (start time, end time) |
| 1 | Job344,1(0,9);Job400,1(9,18);Job268,1(18,27);Job252,1(27,36);Job340,1(36,45);Job256,1(45,54);Job296,1(54,63);Job44,1(63,72);Job32,1(72,81);Job192,1(81,90);Job80,1(90,99);Job116,1(99,108);Job384,1(108,117);Job48,1(117,126);Job20,1(126,135);Job36,1(135,144);Job100,1(144,153);Job24,1(153,162);Job136,1(162,171);Job191,1(171,176);Job359,1(176,181);Job227,1(181,186);Job63,1(186,191);Job199,1(191,196);Job279,1(196,201);Job167,1(201,206);Job135,1(206,211);Job343,1(211,216);Job215,1(216,221);Job379,1(221,226);Job163,1(226,231);Job327,1(231,236);Job335,1(236,241);Job251,1(241,246);Job347,1(246,251);Job295,1(251,256);Job7,1(256,261);Job307,1(261,266);Job43,1(266,271);Job47,1(271,276);Job363,1(276,281);Job351,1(281,286);Job127,1(286,291);Job83,1(291,296);Job375,1(296,301);Job55,1(301,306);Job271,1(306,311);Job143,1(311,316);Job95,1(316,321);Job15,1(321,326);Job219,1(326,331);Job147,1(331,336);Job383,1(336,341);Job387,1(341,346);Job11,1(346,351);Job67,1(351,356);Job19,1(356,361);Job247,1(361,366);Job99,1(366,371);Job31,1(371,376);Job71,1(376,381);Job123,1(381,386);Job26,2(386,390);Job90,2(390,394);Job62,2(394,398);Job22,2(398,402);Job106,2(402,406);Job237,1(406,408);Job81,1(408,410);Job274,2(410,414);Job222,2(414,418);Job318,2(418,422);Job198,2(422,426);Job146,2(426,430);Job173,1(430,432);Job330,2(432,436);Job61,1(436,438);Job266,2(438,442);Job345,1(442,444);Job350,2(444,448);Job194,2(448,452);Job54,2(452,456);Job6,2(456,460);Job185,1(460,462);Job145,1(462,464);Job230,1(464,466);Job389,1(466,468);Job194,1(468,470);Job73,1(470,472);Job225,1(472,474);Job49,1(474,476);Job209,1(476,478);Job273,1(478,480);Job77,1(480,482);Job297,1(482,484);Job22,1(484,486);Job153,1(486,488);Job174,1(488,490);Job122,1(490,492);Job46,1(492,494);Job105,1(494,496);Job26,1(496,498);Job341,1(498,500);Job133,1(500,502);Job337,1(502,504);Job53,1(504,506);Job82,1(506,508);Job289,1(508,510);Job301,1(510,512);Job361,1(512,514);Job141,1(514,516);Job313,1(516,518);Job357,1(518,520);Job197,1(520,522);Job270,1(522,524);Job394,2(524,528);Job377,1(528,530);Job381,1(530,532);Job394,1(532,534);Job393,1(534,536);Job41,1(536,538);Job205,1(538,540);Job242,1(540,542);Job14,1(542,544);Job45,1(544,546);Job177,1(546,548);Job162,1(548,550);Job257,1(550,552);Job385,1(552,554);Job121,1(554,556);Job109,1(556,558);Job302,1(558,560);Job101,1(560,562);Job57,1(562,564);Job221,1(564,566);Job1,1(566,568);Job290,1(568,570);Job186,1(570,572);Job93,1(572,574);Job269,1(574,576);Job129,1(576,578);Job325,1(578,580);Job285,1(580,582);Job254,1(582,584);Job261,1(584,586);Job354,1(586,588);Job229,1(588,590);Job222,1(590,592);Job274,1(592,594);Job50,1(594,596);Job169,1(596,598);Job78,1(598,600);Job158,1(600,602);Job62,1(602,604);Job369,1(604,606);Job317,1(606,608);Job357,3(608,609);Job344,3(609,610);Job345,3(610,611);Job341,3(611,612);Job200,3(612,613);Job161,3(613,614);Job169,3(614,615);Job317,3(615,616);Job189,3(616,617);Job44,3(617,618);Job320,3(618,619);Job141,3(619,620);Job249,3(620,621);Job77,3(621,622);Job17,3(622,623);Job128,3(623,624);Job165,3(624,625);Job308,3(625,626);Job56,3(626,627);Job256,3(627,628);Job209,3(628,629);Job120,3(629,630);Job81,3(630,631);Job288,3(631,632);Job373,3(632,633);Job117,3(633,634);Job208,3(634,635);Job16,3(635,636);Job300,3(636,637);Job221,3(637,638);Job264,3(638,639);Job292,3(639,640);Job328,3(640,641);Job257,3(641,642);Job377,3(642,643);Job349,3(643,644);Job100,3(644,645);Job241,3(645,646);Job45,3(646,647);Job277,3(647,648);Job356,3(648,649);Job244,3(649,650);Job8,3(650,651);Job304,3(651,652);Job313,3(652,653);Job104,3(653,654);Job305,3(654,655);Job68,3(655,656);Job156,3(656,657);Job381,3(657,658);Job125,3(658,659);Job37,3(659,660);Job236,3(660,661);Job85,3(661,662);Job153,3(662,663);Job312,3(663,664);Job393,3(664,665);Job21,3(665,666);Job36,3(666,667);Job396,3(667,668);Job353,3(668,669);Job193,3(669,670);Job40,3(670,671);Job224,3(671,672);Job25,3(672,673);Job64,3(673,674);Job201,3(674,675);Job49,3(675,676);Job133,3(676,677);Job93,3(677,678);Job397,3(678,679);Job61,3(679,680);Job149,3(680,681);Job225,3(681,682);Job164,3(682,683);Job325,3(683,684);Job265,3(684,685);Job228,3(685,686);Job185,3(686,687);Job352,3(687,688);Job113,3(688,689);Job369,3(689,690);Job41,3(690,691);Job213,3(691,692);Job253,3(692,693);Job89,3(693,694);Job268,3(694,695);Job285,3(695,696);Job177,3(696,697);Job272,3(697,698);Job121,3(698,699);Job321,3(699,700);Job269,3(700,701);Job316,3(701,702);Job273,3(702,703);Job197,3(703,704);Job261,3(704,705);Job333,3(705,706);Job73,3(706,707);Job361,3(707,708);Job233,3(708,709);Job260,3(709,710);Job237,3(710,711);Job24,3(711,712);Job28,3(712,713);Job137,3(713,714);Job65,3(714,715);Job136,3(715,716);Job284,3(716,717);Job368,3(717,718);Job69,3(718,719);Job124,3(719,720);Job105,3(720,721);Job1,3(721,722);Job212,3(722,723);Job281,3(723,724);Job33,3(724,725);Job172,3(725,726);Job13,3(726,727);Job389,3(727,728);Job329,3(728,729);Job9,3(729,730);Job57,3(730,731);Job289,3(731,732);Job92,3(732,733);Job108,3(733,734);Job229,3(734,735);Job216,3(735,736);Job385,3(736,737);Job245,3(737,738);Job140,3(738,739);Job388,3(739,740);Job324,3(740,741);Job132,3(741,742);Job217,3(742,743);Job400,3(743,744);Job101,3(744,745);Job380,3(745,746);Job53,3(746,747);Job109,3(747,748);Job276,3(748,749);Job157,3(749,750);Job336,3(750,751);Job293,3(751,752);Job301,3(752,753);Job331,1(753,758);Job303,1(758,763);Job179,1(763,768);Job20,3(768,769);Job384,3(769,770);Job76,3(770,771);Job297,3(771,772);Job364,3(772,773);Job188,3(773,774);Job129,3(774,775);Job280,3(775,776);Job173,3(776,777);Job365,3(777,778);Job176,3(778,779);Job80,3(779,780);Job21,1(780,782);Job5,3(782,783);Job168,3(783,784);Job348,3(784,785);Job181,3(785,786);Job29,1(786,788);Job97,3(788,789);Job192,3(789,790);Job144,3(790,791);Job397,1(791,793);Job38,1(793,795);Job180,3(795,796);Job145,3(796,797);Job249,1(797,799);Job238,1(799,801);Job378,1(801,803);Job65,1(803,805);Job205,3(805,806);Job217,1(806,808);Job305,1(808,810);Job37,1(810,812);Job113,1(812,814);Job193,1(814,816);Job258,2(816,820);Job171,1(820,825); |
| 2 | Job311,1(0,6);Job103,1(6,12);Job35,1(12,18);Job243,1(18,24);Job283,1(24,30);Job391,1(30,36);Job131,1(36,42);Job75,1(42,48);Job119,1(48,54);Job395,1(54,60);Job151,1(60,66);Job132,2(66,72);Job91,1(72,78);Job223,1(78,84);Job23,1(84,90);Job139,1(90,96);Job87,1(96,102);Job27,1(102,108);Job155,1(108,114);Job44,2(114,120);Job376,2(120,126);Job339,1(126,132);Job115,1(132,138);Job291,1(138,144);Job319,1(144,150);Job287,1(150,156);Job207,1(156,162);Job187,1(162,168);Job144,2(168,174);Job203,1(174,180);Job268,2(180,186);Job371,1(186,192);Job384,2(192,198);Job3,1(198,204);Job299,1(204,210);Job159,1(210,216);Job92,2(216,222);Job235,1(222,228);Job111,1(228,234);Job107,1(234,240);Job140,2(240,246);Job168,2(246,252);Job355,1(252,258);Job263,1(258,264);Job259,1(264,270);Job79,1(270,276);Job252,2(276,282);Job315,1(282,288);Job59,1(288,294);Job255,1(294,300);Job239,1(300,306);Job399,1(306,312);Job367,1(312,318);Job211,1(318,324);Job275,1(324,330);Job267,1(330,336);Job323,1(336,342);Job51,1(342,348);Job280,2(348,354);Job39,1(354,360);Job331,2(360,364);Job115,2(364,368);Job187,2(368,372);Job387,2(372,376);Job29,3(376,380);Job287,2(380,384);Job337,3(384,388);Job267,2(388,392);Job223,2(392,396);Job75,2(396,400);Job7,2(400,404);Job373,2(404,407);Job202,2(407,410);Job94,2(410,413);Job181,2(413,416);Job134,2(416,419);Job78,2(419,422);Job314,2(422,425);Job361,2(425,428);Job277,1(428,431);Job366,2(431,434);Job30,2(434,437);Job278,2(437,440);Job291,2(440,444);Job42,2(444,447);Job230,2(447,450);Job178,2(450,453);Job210,2(453,456);Job253,1(456,459);Job378,2(459,462);Job161,1(462,465);Job298,2(465,468);Job307,2(468,472);Job270,2(472,475);Job329,1(475,478);Job379,2(478,482);Job102,2(482,485);Job38,2(485,488);Job262,2(488,491);Job190,2(491,494);Job322,2(494,497);Job137,1(497,500);Job70,2(500,503);Job317,2(503,506);Job150,2(506,509);Job349,2(509,512);Job133,2(512,515);Job358,2(515,518);Job349,1(518,521);Job250,2(521,524);Job89,1(524,527);Job321,1(527,530);Job86,2(530,533);Job382,2(533,536);Job281,2(536,539);Job122,2(539,542);Job386,2(542,545);Job306,2(545,548);Job246,2(548,551);Job77,2(551,554);Job390,2(554,557);Job282,2(557,560);Job333,1(560,563);Job149,1(563,566);Job186,2(566,569);Job374,2(569,572);Job254,2(572,575);Job33,1(575,578);Job5,2(578,581);Job242,2(581,584);Job293,2(584,587);Job214,2(587,590);Job50,2(590,593);Job138,2(593,596);Job281,1(596,599);Job241,1(599,602);Job245,2(602,605);Job182,2(605,608);Job98,2(608,611);Job338,2(611,614);Job365,1(614,617);Job13,1(617,620);Job205,2(620,623);Job170,2(623,626);Job46,2(626,629);Job265,2(629,632);Job354,2(632,635);Job185,2(635,638);Job245,1(638,641);Job10,2(641,644);Job58,2(644,647);Job233,2(647,650);Job234,2(650,653);Job302,2(653,656);Job34,2(656,659);Job162,2(659,662);Job14,2(662,665);Job353,1(665,668);Job213,2(668,671);Job294,2(671,674);Job286,2(674,677);Job157,1(677,680);Job142,2(680,683);Job290,2(683,686);Job346,2(686,689);Job373,1(689,692);Job189,1(692,695);Job213,1(695,698);Job117,2(698,701);Job310,2(701,704);Job218,2(704,707);Job345,2(707,710);Job342,2(710,713);Job2,2(713,716);Job226,2(716,719);Job114,2(719,722);Job174,2(722,725);Job125,2(725,728);Job334,2(728,731);Job362,2(731,734);Job309,1(734,737);Job309,3(737,741);Job82,2(741,744);Job110,2(744,747);Job370,2(747,750);Job154,2(750,753);Job231,1(753,759);Job175,1(759,765);Job195,1(765,771);Job183,1(771,777);Job221,2(777,780);Job393,2(780,783);Job74,2(783,786);Job333,2(786,789);Job125,1(789,792);Job326,2(792,795);Job293,1(795,798);Job166,2(798,801);Job201,1(801,804);Job265,1(804,807);Job238,2(807,810);Job130,2(810,813);Job126,2(813,816);Job206,2(816,819);Job398,2(819,822);Job66,2(822,825); |
| 3 | Job195,3(0,13);Job331,3(13,26);Job287,3(26,39);Job211,3(39,52);Job99,3(52,65);Job71,3(65,78);Job243,3(78,91);Job191,3(91,104);Job148,1(104,111);Job392,1(111,118);Job132,1(118,125);Job220,1(125,132);Job288,1(132,139);Job88,1(139,146);Job208,1(146,153);Job248,1(153,160);Job312,1(160,167);Job92,1(167,174);Job140,1(174,181);Job300,1(181,188);Job52,1(188,195);Job68,1(195,202);Job8,1(202,209);Job260,1(209,216);Job188,1(216,223);Job76,1(223,230);Job396,1(230,237);Job84,1(237,244);Job280,1(244,251);Job348,1(251,258);Job128,1(258,265);Job376,1(265,272);Job152,1(272,279);Job236,1(279,286);Job108,1(286,293);Job320,1(293,300);Job164,1(300,307);Job160,1(307,314);Job356,1(314,321);Job292,1(321,328);Job388,1(328,335);Job144,1(335,342);Job200,1(342,349);Job64,1(349,356);Job374,3(356,360);Job302,3(360,364);Job334,3(364,368);Job118,3(368,372);Job310,3(372,376);Job42,3(376,380);Job106,3(380,384);Job126,3(384,388);Job69,1(388,392);Job242,3(392,396);Job70,3(396,400);Job282,3(400,404);Job2,3(404,408);Job233,1(408,412);Job178,3(412,416);Job366,3(416,420);Job82,3(420,424);Job278,3(424,428);Job266,3(428,432);Job74,3(432,436);Job262,3(436,440);Job210,3(440,444);Job26,3(444,448);Job294,3(448,452);Job14,3(452,456);Job18,3(456,460);Job66,3(460,464);Job390,3(464,468);Job10,3(468,472);Job246,3(472,476);Job318,3(476,480);Job162,3(480,484);Job98,3(484,488);Job158,3(488,492);Job202,3(492,496);Job326,3(496,500);Job130,3(500,504);Job9,1(504,508);Job25,1(508,512);Job174,3(512,516);Job150,3(516,520);Job17,1(520,524);Job238,3(524,528);Job190,3(528,532);Job354,3(532,536);Job258,3(536,540);Job165,1(540,544);Job6,3(544,548);Job90,3(548,552);Job306,3(552,556);Job154,3(556,560);Job378,3(560,564);Job386,3(564,568);Job97,1(568,572);Job250,3(572,576);Job286,3(576,580);Job117,1(580,584);Job146,3(584,588);Job181,1(588,592);Job350,3(592,596);Job170,3(596,600);Job298,3(600,604);Job5,1(604,608);Job270,3(608,612);Job134,3(612,616);Job114,3(616,620);Job102,3(620,624);Job342,3(624,628);Job314,3(628,632);Job234,3(632,636);Job226,3(636,640);Job322,3(640,644);Job86,3(644,648);Job38,3(648,652);Job34,3(652,656);Job194,3(656,660);Job46,3(660,664);Job218,3(664,668);Job30,3(668,672);Job142,3(672,676);Job166,3(676,680);Job358,3(680,684);Job122,3(684,688);Job254,3(688,692);Job214,3(692,696);Job274,3(696,700);Job370,3(700,704);Job206,3(704,708);Job346,3(708,712);Job50,3(712,716);Job85,1(716,720);Job394,3(720,724);Job362,3(724,728);Job138,3(728,732);Job228,1(732,739);Job264,1(739,746);Job328,1(746,753);Job12,1(753,760);Job160,3(760,763);Job240,1(763,770);Job232,1(770,777);Job182,3(777,781);Job230,3(781,785);Job382,3(785,789);Job338,3(789,793);Job58,3(793,797);Job332,3(797,800);Job54,3(800,804);Job78,3(804,808);Job290,3(808,812);Job22,3(812,816);Job216,1(816,823); |
| 4 | Job60,1(0,9);Job112,1(9,18);Job372,1(18,27);Job196,1(27,36);Job124,1(36,45);Job156,1(45,54);Job56,1(54,63);Job224,1(63,72);Job204,1(72,81);Job168,1(81,90);Job368,1(90,99);Job172,1(99,108);Job40,1(108,117);Job180,1(117,126);Job364,1(126,135);Job176,1(135,144);Job272,1(144,153);Job4,1(153,162);Job104,1(162,171);Job28,1(171,180);Job16,1(180,189);Job308,1(189,198);Job184,1(198,207);Job120,1(207,216);Job284,1(216,225);Job276,1(225,234);Job72,1(234,243);Job212,1(243,252);Job324,1(252,261);Job336,1(261,270);Job96,1(270,279);Job316,1(279,288);Job380,1(288,297);Job352,1(297,306);Job340,2(306,310);Job260,2(310,314);Job296,2(314,318);Job400,2(318,322);Job80,2(322,326);Job156,2(326,330);Job184,2(330,334);Job356,2(334,338);Job300,2(338,342);Job392,2(342,346);Job256,2(346,350);Job228,2(350,354);Job232,2(354,358);Job108,2(358,362);Job56,2(362,366);Job32,2(366,370);Job160,2(370,374);Job76,2(374,378);Job320,2(378,382);Job388,2(382,386);Job20,2(386,390);Job64,2(390,394);Job276,2(394,398);Job336,2(398,402);Job60,2(402,406);Job396,2(406,410);Job172,2(410,414);Job176,2(414,418);Job136,2(418,422);Job96,2(422,426);Job240,2(426,430);Job72,2(430,434);Job259,2(434,437);Job391,2(437,440);Job255,2(440,443);Job199,2(443,446);Job47,2(446,449);Job375,2(449,452);Job99,2(452,455);Job235,2(455,458);Job355,2(458,461);Job27,2(461,464);Job263,2(464,467);Job395,2(467,470);Job153,2(470,472);Job15,2(472,475);Job155,2(475,478);Job165,2(478,480);Job371,2(480,483);Job51,2(483,486);Job215,2(486,489);Job347,2(489,492);Job335,2(492,495);Job303,2(495,498);Job351,2(498,501);Job195,2(501,504);Job319,2(504,507);Job247,2(507,510);Job315,2(510,513);Job283,2(513,516);Job135,2(516,519);Job313,2(519,521);Job359,2(521,524);Job171,2(524,527);Job159,2(527,530);Job239,2(530,533);Job39,2(533,536);Job251,2(536,539);Job3,2(539,542);Job299,2(542,545);Job111,2(545,548);Job43,2(548,551);Job289,2(551,553);Job243,2(553,556);Job129,2(556,558);Job121,2(558,560);Job367,2(560,563);Job151,2(563,566);Job203,2(566,569);Job163,2(569,572);Job79,2(572,575);Job19,2(575,578);Job323,2(578,581);Job95,2(581,584);Job311,2(584,587);Job339,2(587,590);Job83,2(590,593);Job123,2(593,596);Job279,2(596,599);Job231,2(599,602);Job275,2(602,605);Job71,2(605,608);Job35,2(608,611);Job167,2(611,614);Job55,2(614,617);Job363,2(617,620);Job365,2(620,622);Job9,2(622,624);Job297,2(624,626);Job305,2(626,628);Job105,2(628,630);Job301,2(630,632);Job253,2(632,634);Job109,2(634,636);Job337,2(636,638);Job329,2(638,640);Job173,2(640,642);Job273,2(642,644);Job225,2(644,646);Job397,2(646,648);Job277,2(648,650);Job209,2(650,652);Job177,2(652,654);Job369,2(654,656);Job201,2(656,658);Job25,2(658,660);Job193,2(660,662);Job137,2(662,664);Job197,2(664,666);Job141,2(666,668);Job97,2(668,670);Job285,2(670,672);Job57,2(672,674);Job53,2(674,676);Job61,2(676,678);Job325,2(678,680);Job1,2(680,682);Job377,2(682,684);Job33,2(684,686);Job189,2(686,688);Job81,2(688,690);Job261,2(690,692);Job309,2(692,694);Job69,2(694,696);Job49,2(696,698);Job381,2(698,700);Job321,2(700,702);Job101,2(702,704);Job37,2(704,706);Job89,2(706,708);Job149,2(708,710);Job113,2(710,712);Job229,2(712,714);Job389,2(714,716);Job217,2(716,718);Job13,2(718,720);Job21,2(720,722);Job341,2(722,724);Job65,2(724,726);Job145,2(726,728);Job41,2(728,730);Job157,2(730,732);Job241,2(732,734);Job169,2(734,736);Job244,1(736,745);Job360,1(745,754);Job332,1(754,763);Job385,2(763,765);Job269,2(765,767);Job93,2(767,769);Job17,2(769,771);Job139,2(771,774);Job327,2(774,777);Job357,2(777,779);Job249,2(779,781);Job219,2(781,784);Job237,2(784,786);Job73,2(786,788);Job257,2(788,790);Job399,2(790,793);Job211,2(793,796);Job131,2(796,799);Job183,2(799,802);Job227,2(802,805);Job161,2(805,807);Job63,2(807,810);Job127,2(810,813);Job304,1(813,822); |
| 5 | Job83,3(0,9);Job215,3(9,18);Job151,3(18,27);Job271,3(27,36);Job79,3(36,45);Job235,3(45,54);Job19,3(54,63);Job207,3(63,72);Job399,3(72,81);Job387,3(81,90);Job359,3(90,99);Job103,3(99,108);Job35,3(108,117);Job155,3(117,126);Job67,3(126,135);Job311,3(135,144);Job379,3(144,153);Job75,3(153,162);Job91,3(162,171);Job87,3(171,180);Job351,3(180,189);Job247,3(189,198);Job327,3(198,207);Job267,3(207,216);Job11,3(216,225);Job167,3(225,234);Job47,3(234,243);Job163,3(243,252);Job231,3(252,261);Job371,3(261,270);Job171,3(270,279);Job275,3(279,288);Job143,3(288,297);Job391,3(297,306);Job303,3(306,315);Job263,3(315,324);Job55,3(324,333);Job127,3(333,342);Job295,3(342,351);Job175,3(351,360);Job111,3(360,369);Job123,3(369,378);Job343,3(378,387);Job3,3(387,396);Job222,3(396,403);Job330,3(403,410);Job398,3(410,417);Job94,3(417,424);Job186,3(424,431);Job29,2(431,435);Job283,3(435,444);Job18,2(444,450);Job158,2(450,456);Job118,2(456,462);Job175,2(462,467);Job343,2(467,472);Job107,2(472,477);Job147,2(477,482);Job67,2(482,487);Job295,2(487,492);Job383,2(492,497);Job119,2(497,502);Job23,2(502,507);Job11,2(507,512);Job191,2(512,517);Job31,2(517,522);Job91,2(522,527);Job87,2(527,532);Job207,2(532,537);Job59,2(537,542);Job271,2(542,547);Job85,2(547,551);Job179,2(551,556);Job103,2(556,561);Job298,1(561,563);Job234,1(563,565);Job45,2(565,569);Job353,2(569,573);Job66,1(573,575);Job190,1(575,577);Job218,1(577,579);Job146,1(579,581);Job34,1(581,583);Job250,1(583,585);Job198,1(585,587);Job10,1(587,589);Job306,1(589,591);Job314,1(591,593);Job102,1(593,595);Job110,1(595,597);Job282,1(597,599);Job90,1(599,601);Job334,1(601,603);Job366,1(603,605);Job86,1(605,607);Job382,1(607,609);Job118,1(609,611);Job262,1(611,613);Job362,1(613,615);Job206,1(615,617);Job214,1(617,619);Job210,1(619,621);Job42,1(621,623);Job226,1(623,625);Job266,1(625,627);Job326,1(627,629);Job342,1(629,631);Job294,1(631,633);Job390,1(633,635);Job170,1(635,637);Job370,1(637,639);Job182,1(639,641);Job6,1(641,643);Job70,1(643,645);Job54,1(645,647);Job142,1(647,649);Job166,1(649,651);Job286,1(651,653);Job330,1(653,655);Job18,1(655,657);Job386,1(657,659);Job246,1(659,661);Job134,1(661,663);Job322,1(663,665);Job358,1(665,667);Job338,1(667,669);Job2,1(669,671);Job202,1(671,673);Job150,1(673,675);Job154,1(675,677);Job126,1(677,679);Job94,1(679,681);Job74,1(681,683);Job258,1(683,685);Job178,1(685,687);Job106,1(687,689);Job30,1(689,691);Job98,1(691,693);Job130,1(693,695);Job374,1(695,697);Job355,3(697,706);Job395,3(706,715);Job219,3(715,724);Job291,3(724,733);Job43,3(733,742);Job223,3(742,751);Job135,3(751,760);Job299,3(760,769);Job115,3(769,778);Job58,1(778,780);Job110,3(780,787);Job114,1(787,789);Job318,1(789,791);Job350,1(791,793);Job62,3(793,800);Job346,1(800,802);Job138,1(802,804);Job310,1(804,806);Job278,1(806,808);Job398,1(808,810);Job143,2(810,815);Job251,3(815,824); |
| 6 | Job315,3(0,12);Job131,3(12,24);Job27,3(24,36);Job107,3(36,48);Job335,3(48,60);Job259,3(60,72);Job23,3(72,84);Job147,3(84,96);Job227,3(96,108);Job7,3(108,120);Job183,3(120,132);Job119,3(132,144);Job239,3(144,156);Job339,3(156,168);Job51,3(168,180);Job203,3(180,192);Job95,3(192,204);Job323,3(204,216);Job39,3(216,228);Job63,3(228,240);Job383,3(240,252);Job139,3(252,264);Job375,3(264,276);Job59,3(276,288);Job363,3(288,300);Job279,3(300,312);Job199,3(312,324);Job347,3(324,336);Job159,3(336,348);Job15,3(348,360);Job255,3(360,372);Job307,3(372,384);Job187,3(384,396);Job367,3(396,408);Job31,3(408,420);Job179,3(420,432);Job198,3(432,443);Job16,2(443,448);Job188,2(448,453);Job116,2(453,458);Job360,2(458,463);Job124,2(463,468);Job4,2(468,473);Job8,2(473,478);Job164,2(478,483);Job212,2(483,488);Job28,2(488,493);Job292,2(493,498);Job196,2(498,503);Job120,2(503,508);Job84,2(508,513);Job180,2(513,518);Job48,2(518,523);Job152,2(523,528);Job380,2(528,533);Job244,2(533,538);Job284,2(538,543);Job192,2(543,548);Job216,2(548,553);Job308,2(553,558);Job324,2(558,563);Job100,2(563,568);Job312,2(568,573);Job364,2(573,578);Job264,2(578,583);Job304,2(583,588);Job236,2(588,593);Job344,2(593,598);Job208,2(598,603);Job128,2(603,608);Job148,2(608,613);Job332,2(613,618);Job316,2(618,623);Job12,2(623,628);Job368,2(628,633);Job68,2(633,638);Job272,2(638,643);Job352,2(643,648);Job104,2(648,653);Job220,2(653,658);Job288,2(658,663);Job112,2(663,668);Job348,2(668,673);Job24,2(673,678);Job328,2(678,683);Job40,2(683,688);Job200,2(688,693);Job372,2(693,698);Job88,2(698,703);Job152,3(703,706);Job72,3(706,709);Job4,3(709,712);Job88,3(712,715);Job392,3(715,718);Job52,3(718,721);Job296,3(721,724);Job116,3(724,727);Job376,3(727,730);Job232,3(730,733);Job48,3(733,736);Job12,3(736,739);Job60,3(739,742);Job196,3(742,745);Job252,3(745,748);Job184,3(748,751);Job148,3(751,754);Job220,3(754,757);Job372,3(757,760);Job240,3(760,763);Job32,3(763,766);Job224,2(766,771);Job248,3(771,774);Job96,3(774,777);Job319,3(777,789);Job36,2(789,794);Job84,3(794,797);Job340,3(797,800);Job112,3(800,803);Job204,3(803,806);Job248,2(806,811);Job204,2(811,816);Job52,2(816,821);Job360,3(821,824); |