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| **УТВЕРЖДАЮ** |  |
| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Л. Г. Афраймович**  **«\_\_\_» \_\_\_\_\_\_\_\_\_ 2023 г.** |  |

**ОТЧЕТ-АННОТАЦИЯ**

**к научно-исследовательской работе**

**по теме**

**«Задача производственного планирования**

**с альтернативными технологическими процессами»**

**для этапа «Формирование верификационного базиса»**

г. Н. Новгород, 2023

**Введение**

В рамках данного документа сформированы предложения по проверке корректного выполнения функций алгоритма и проверок выходных результатов.

**Описание проверки корректности выполнения функций**

Для отработки работоспособности функций составлены контрольные примеры для каждой функции.

**Тестирование функции алгоритма**

Вход: файлы system.xml\*, tech.xml\*.

Выход: файл result.xml\*.

Ожидаемый вывод: выходной файл result.xml должен содержать информацию о заказах, созданных продуктах и операциях, с помощью которых должен создаваться продукт. Однако время, отведённое на выполнение операции, продукта или заказа невозможно предсказать из-за элемента случайности в алгоритме.

**Тестирование функций проверок результатов**

**Тест 1 (функция сравнения работы двух алгоритмов)**

Вход: файлы result.xml\*, resultAnother.xml\*.

Выход: Заказ 1: Критерий 1 = 100711.6049382716 | Критерий 2 = 76024.71604938271.

Ожидаемый вывод: значения критериев результатов работы двух алгоритмов.

**Тест 2 (функция проверки на физическую возможность выполнить данный заказ на данном производстве, положительный результат)**

Вход: файлы system.xml\*, tech.xml\*.

Выход: true.

Ожидаемый вывод: совпадает с ожидаемым.

**Тест 3 (функция проверки на физическую возможность осуществить данную укладку заказов на производстве, положительный результат)**

Вход: файлы system.xml\*, tech.xml\*, result.xml\*.

Выход: true.

Ожидаемый вывод: совпадает с ожидаемым.

**Тест 4 (функция проверки на физическую возможность выполнить данный заказ на данном производстве, отрицательный результат)**

Вход: файлы system.xml\*, techWithError.xml\*.

Выход: Операция 101 не может быть выполнена. False.

Ожидаемый вывод: совпадает с ожидаемым.

**Тест 5 (функция проверки на физическую возможность осуществить данную укладку заказов на производстве, отрицательный результат)**

Вход: файлы system.xml\*, tech.xml\*, resultWithError.xml\*.

Выход:

Операция 201 занимает оборудование дольше заявленного

Операция 201 выполняется в неверное время

Операция 206 нарушает технологический процесс

Не все операции из технологического процесса 2 были выполнены для продукта 1

Продукт 1 создаётся в неверное время

Заказ 1 выполняется в неверное время

Две операции занимают одно и то же оборудование в одно и то же время

false

Ожидаемый вывод: совпадает с ожидаемым.

**Приложение**

system.xml

<?xml version="1.0" encoding="UTF-8"?>

<SystemInformation>

<CalendarInformation>

<Timetable>

<Day day\_of\_week="1" time\_period="08:00:00-16:00:00" />

<Day day\_of\_week="2" time\_period="08:00:00-16:00:00" />

<Day day\_of\_week="3" time\_period="08:00:00-16:00:00" />

<Day day\_of\_week="4" time\_period="08:00:00-16:00:00" />

<Day day\_of\_week="5" time\_period="08:00:00-16:00:00" />

</Timetable>

</CalendarInformation>

<EquipmentInformation>

<EquipmentGroup id="1" name="Group 1">

<Equipment id="60" name="Equipment 1.1" />

</EquipmentGroup>

<EquipmentGroup id="2" name="Group">

<Equipment id="70" name="Equipment 2.1-0" />

<Equipment id="71" name="Equipment 2.1-1" />

<Equipment id="72" name="Equipment 2.1-2" />

<Equipment id="73" name="Equipment 2.1-3" />

</EquipmentGroup>

</EquipmentInformation>

</SystemInformation>

tech.xml

<?xml version="1.0" encoding="windows-1251"?>

<OrderInformation>

<Order id="1" date\_begin="02.01.2017 08:00:00" date\_end="02.01.2017 09:30:00">

<Detail id="1" name="Part1-1" count = "10">

<TechProcess id="1">

<Operation id="101" name="101" duration="300" equipment\_group="1" prev\_operation\_id="0" next\_operation\_id="102"/>

<Operation id="102" name="102" duration="400" equipment\_group="1" prev\_operation\_id="101" next\_operation\_id="103"/>

<Operation id="103" name="103" duration="1000" equipment\_group="1" prev\_operation\_id="102" next\_operation\_id="104"/>

<Operation id="104" name="104" duration="100" equipment\_group="1" prev\_operation\_id="103" next\_operation\_id="105"/>

<Operation id="105" name="105" duration="400" equipment\_group="1" prev\_operation\_id="104" next\_operation\_id="106"/>

<Operation id="106" name="106" duration="1000" equipment\_group="2" prev\_operation\_id="105" next\_operation\_id="107"/>

<Operation id="107" name="107" duration="400" equipment\_group="1" prev\_operation\_id="106" next\_operation\_id="0"/>

</TechProcess>

<TechProcess id="2">

<Operation id="201" name="201" duration="3000" equipment\_group="1" prev\_operation\_id="0" next\_operation\_id="202"/>

<Operation id="202" name="202" duration="4000" equipment\_group="1" prev\_operation\_id="201" next\_operation\_id="203"/>

<Operation id="203" name="203" duration="10000" equipment\_group="1" prev\_operation\_id="202" next\_operation\_id="204"/>

<Operation id="204" name="204" duration="1000" equipment\_group="1" prev\_operation\_id="203" next\_operation\_id="205"/>

<Operation id="205" name="205" duration="4000" equipment\_group="1" prev\_operation\_id="204" next\_operation\_id="206"/>

<Operation id="206" name="206" duration="10000" equipment\_group="2" prev\_operation\_id="2062" next\_operation\_id="207"/>

<Operation id="207" name="207" duration="4000" equipment\_group="1" prev\_operation\_id="206" next\_operation\_id="0"/>

</TechProcess>

</Detail>

</Order>

</OrderInformation>

result.xml

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<Result all\_start\_date\_time="02.01.2017 08:00:00" all\_end\_date\_time="06.01.2017 15:43:20">

<Order order\_id="1" order\_start\_date\_time="02.01.2017 08:00:00" order\_end\_date\_time="06.01.2017 15:43:20">

<Product id="1" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 08:00:00" product\_end\_date\_time="06.01.2017 11:03:20">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:00:00" operation\_end\_date\_time="02.01.2017 08:50:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:35:00" operation\_end\_date\_time="02.01.2017 13:41:40"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 10:41:40" operation\_end\_date\_time="03.01.2017 13:28:20"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 09:58:20" operation\_end\_date\_time="05.01.2017 10:15:00"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:30:00" operation\_end\_date\_time="05.01.2017 12:36:40"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="70" operation\_start\_date\_time="05.01.2017 12:36:40" operation\_end\_date\_time="05.01.2017 15:23:20"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:56:40" operation\_end\_date\_time="06.01.2017 11:03:20"/>

</Product>

<Product id="2" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:50:00" product\_end\_date\_time="06.01.2017 09:43:20">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:50:00" operation\_end\_date\_time="02.01.2017 08:55:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:41:40" operation\_end\_date\_time="02.01.2017 13:48:20"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 13:28:20" operation\_end\_date\_time="03.01.2017 13:45:00"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:15:00" operation\_end\_date\_time="05.01.2017 10:16:40"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:36:40" operation\_end\_date\_time="05.01.2017 12:43:20"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="71" operation\_start\_date\_time="05.01.2017 12:43:20" operation\_end\_date\_time="05.01.2017 13:00:00"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:36:40" operation\_end\_date\_time="06.01.2017 09:43:20"/>

</Product>

<Product id="3" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:55:00" product\_end\_date\_time="06.01.2017 09:50:00">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:55:00" operation\_end\_date\_time="02.01.2017 09:00:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:48:20" operation\_end\_date\_time="02.01.2017 13:55:00"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 13:45:00" operation\_end\_date\_time="03.01.2017 14:01:40"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:16:40" operation\_end\_date\_time="05.01.2017 10:18:20"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:43:20" operation\_end\_date\_time="05.01.2017 12:50:00"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="72" operation\_start\_date\_time="05.01.2017 12:50:00" operation\_end\_date\_time="05.01.2017 13:06:40"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:43:20" operation\_end\_date\_time="06.01.2017 09:50:00"/>

</Product>

<Product id="4" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 09:00:00" product\_end\_date\_time="06.01.2017 09:56:40">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:00:00" operation\_end\_date\_time="02.01.2017 09:05:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:55:00" operation\_end\_date\_time="02.01.2017 14:01:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 14:01:40" operation\_end\_date\_time="03.01.2017 14:18:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:18:20" operation\_end\_date\_time="05.01.2017 10:20:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:50:00" operation\_end\_date\_time="05.01.2017 12:56:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="05.01.2017 12:56:40" operation\_end\_date\_time="05.01.2017 13:13:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:50:00" operation\_end\_date\_time="06.01.2017 09:56:40"/>

</Product>

<Product id="5" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 09:05:00" product\_end\_date\_time="06.01.2017 12:16:40">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:05:00" operation\_end\_date\_time="02.01.2017 09:55:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 14:01:40" operation\_end\_date\_time="02.01.2017 15:08:20"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 14:18:20" operation\_end\_date\_time="04.01.2017 09:05:00"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:20:00" operation\_end\_date\_time="05.01.2017 10:36:40"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:56:40" operation\_end\_date\_time="05.01.2017 14:03:20"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="71" operation\_start\_date\_time="05.01.2017 14:03:20" operation\_end\_date\_time="06.01.2017 08:50:00"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 11:10:00" operation\_end\_date\_time="06.01.2017 12:16:40"/>

</Product>

<Product id="6" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 09:55:00" product\_end\_date\_time="06.01.2017 13:30:00">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:55:00" operation\_end\_date\_time="02.01.2017 10:45:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 15:08:20" operation\_end\_date\_time="03.01.2017 08:15:00"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 09:05:00" operation\_end\_date\_time="04.01.2017 11:51:40"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:36:40" operation\_end\_date\_time="05.01.2017 10:53:20"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 14:03:20" operation\_end\_date\_time="05.01.2017 15:10:00"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="72" operation\_start\_date\_time="05.01.2017 15:10:00" operation\_end\_date\_time="06.01.2017 09:56:40"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 12:23:20" operation\_end\_date\_time="06.01.2017 13:30:00"/>

</Product>

<Product id="7" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 10:45:00" product\_end\_date\_time="06.01.2017 11:10:00">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 10:45:00" operation\_end\_date\_time="02.01.2017 10:50:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="03.01.2017 08:15:00" operation\_end\_date\_time="03.01.2017 08:21:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="04.01.2017 11:51:40" operation\_end\_date\_time="04.01.2017 12:08:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:53:20" operation\_end\_date\_time="05.01.2017 10:55:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 15:10:00" operation\_end\_date\_time="05.01.2017 15:16:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="05.01.2017 15:16:40" operation\_end\_date\_time="05.01.2017 15:33:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 11:03:20" operation\_end\_date\_time="06.01.2017 11:10:00"/>

</Product>

<Product id="8" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 10:50:00" product\_end\_date\_time="06.01.2017 14:36:40">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 10:50:00" operation\_end\_date\_time="02.01.2017 11:40:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="03.01.2017 08:21:40" operation\_end\_date\_time="03.01.2017 09:28:20"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 12:08:20" operation\_end\_date\_time="04.01.2017 14:55:00"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:55:00" operation\_end\_date\_time="05.01.2017 11:11:40"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 15:16:40" operation\_end\_date\_time="06.01.2017 08:23:20"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="70" operation\_start\_date\_time="06.01.2017 08:23:20" operation\_end\_date\_time="06.01.2017 11:10:00"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 13:30:00" operation\_end\_date\_time="06.01.2017 14:36:40"/>

</Product>

<Product id="9" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 11:40:00" product\_end\_date\_time="06.01.2017 15:43:20">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 11:40:00" operation\_end\_date\_time="02.01.2017 12:30:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="03.01.2017 09:28:20" operation\_end\_date\_time="03.01.2017 10:35:00"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 14:55:00" operation\_end\_date\_time="05.01.2017 09:41:40"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:11:40" operation\_end\_date\_time="05.01.2017 11:28:20"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="06.01.2017 08:23:20" operation\_end\_date\_time="06.01.2017 09:30:00"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="71" operation\_start\_date\_time="06.01.2017 09:30:00" operation\_end\_date\_time="06.01.2017 12:16:40"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 14:36:40" operation\_end\_date\_time="06.01.2017 15:43:20"/>

</Product>

<Product id="10" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 12:30:00" product\_end\_date\_time="06.01.2017 12:23:20">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:30:00" operation\_end\_date\_time="02.01.2017 12:35:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="03.01.2017 10:35:00" operation\_end\_date\_time="03.01.2017 10:41:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="05.01.2017 09:41:40" operation\_end\_date\_time="05.01.2017 09:58:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:28:20" operation\_end\_date\_time="05.01.2017 11:30:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:30:00" operation\_end\_date\_time="06.01.2017 09:36:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="06.01.2017 09:36:40" operation\_end\_date\_time="06.01.2017 09:53:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 12:16:40" operation\_end\_date\_time="06.01.2017 12:23:20"/>

</Product>

</Order>

</Result>

resultAnother.xml

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<Result all\_start\_date\_time="02.01.2017 08:00:00" all\_end\_date\_time="06.01.2017 09:13:20">

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<Product id="1" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:00:00" product\_end\_date\_time="05.01.2017 12:13:20">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:00:00" operation\_end\_date\_time="02.01.2017 08:05:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 11:50:00" operation\_end\_date\_time="02.01.2017 11:56:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 08:56:40" operation\_end\_date\_time="03.01.2017 09:13:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="04.01.2017 13:43:20" operation\_end\_date\_time="04.01.2017 13:45:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="04.01.2017 15:00:00" operation\_end\_date\_time="04.01.2017 15:06:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="70" operation\_start\_date\_time="04.01.2017 15:06:40" operation\_end\_date\_time="04.01.2017 15:23:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:06:40" operation\_end\_date\_time="05.01.2017 12:13:20"/>

</Product>

<Product id="2" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:05:00" product\_end\_date\_time="05.01.2017 12:20:00">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:05:00" operation\_end\_date\_time="02.01.2017 08:10:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 11:56:40" operation\_end\_date\_time="02.01.2017 12:03:20"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 09:13:20" operation\_end\_date\_time="03.01.2017 09:30:00"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="04.01.2017 13:45:00" operation\_end\_date\_time="04.01.2017 13:46:40"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="04.01.2017 15:06:40" operation\_end\_date\_time="04.01.2017 15:13:20"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="71" operation\_start\_date\_time="04.01.2017 15:13:20" operation\_end\_date\_time="04.01.2017 15:30:00"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:13:20" operation\_end\_date\_time="05.01.2017 12:20:00"/>

</Product>

<Product id="3" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:10:00" product\_end\_date\_time="05.01.2017 12:26:40">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:10:00" operation\_end\_date\_time="02.01.2017 08:15:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:03:20" operation\_end\_date\_time="02.01.2017 12:10:00"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 09:30:00" operation\_end\_date\_time="03.01.2017 09:46:40"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="04.01.2017 13:46:40" operation\_end\_date\_time="04.01.2017 13:48:20"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="04.01.2017 15:13:20" operation\_end\_date\_time="04.01.2017 15:20:00"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="72" operation\_start\_date\_time="04.01.2017 15:20:00" operation\_end\_date\_time="04.01.2017 15:36:40"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:20:00" operation\_end\_date\_time="05.01.2017 12:26:40"/>

</Product>

<Product id="4" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:15:00" product\_end\_date\_time="05.01.2017 12:33:20">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:15:00" operation\_end\_date\_time="02.01.2017 08:20:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:10:00" operation\_end\_date\_time="02.01.2017 12:16:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 09:46:40" operation\_end\_date\_time="03.01.2017 10:03:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="04.01.2017 13:48:20" operation\_end\_date\_time="04.01.2017 13:50:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="04.01.2017 15:20:00" operation\_end\_date\_time="04.01.2017 15:26:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="70" operation\_start\_date\_time="04.01.2017 15:26:40" operation\_end\_date\_time="04.01.2017 15:43:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:26:40" operation\_end\_date\_time="05.01.2017 12:33:20"/>

</Product>

<Product id="5" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:20:00" product\_end\_date\_time="05.01.2017 12:40:00">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:20:00" operation\_end\_date\_time="02.01.2017 08:25:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:16:40" operation\_end\_date\_time="02.01.2017 12:23:20"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 10:03:20" operation\_end\_date\_time="03.01.2017 10:20:00"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="04.01.2017 13:50:00" operation\_end\_date\_time="04.01.2017 13:51:40"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="04.01.2017 15:26:40" operation\_end\_date\_time="04.01.2017 15:33:20"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="71" operation\_start\_date\_time="04.01.2017 15:33:20" operation\_end\_date\_time="04.01.2017 15:50:00"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:33:20" operation\_end\_date\_time="05.01.2017 12:40:00"/>

</Product>

<Product id="6" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 08:25:00" product\_end\_date\_time="05.01.2017 13:53:20">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:25:00" operation\_end\_date\_time="02.01.2017 09:15:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:23:20" operation\_end\_date\_time="02.01.2017 13:30:00"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 10:20:00" operation\_end\_date\_time="03.01.2017 13:06:40"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="04.01.2017 13:51:40" operation\_end\_date\_time="04.01.2017 14:08:20"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="04.01.2017 15:33:20" operation\_end\_date\_time="05.01.2017 08:40:00"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="70" operation\_start\_date\_time="05.01.2017 08:40:00" operation\_end\_date\_time="05.01.2017 11:26:40"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:46:40" operation\_end\_date\_time="05.01.2017 13:53:20"/>

</Product>

<Product id="7" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 09:15:00" product\_end\_date\_time="05.01.2017 15:00:00">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:15:00" operation\_end\_date\_time="02.01.2017 10:05:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:30:00" operation\_end\_date\_time="02.01.2017 14:36:40"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 13:06:40" operation\_end\_date\_time="03.01.2017 15:53:20"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="04.01.2017 14:08:20" operation\_end\_date\_time="04.01.2017 14:25:00"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 08:40:00" operation\_end\_date\_time="05.01.2017 09:46:40"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="71" operation\_start\_date\_time="05.01.2017 09:46:40" operation\_end\_date\_time="05.01.2017 12:33:20"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 13:53:20" operation\_end\_date\_time="05.01.2017 15:00:00"/>

</Product>

<Product id="8" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 10:05:00" product\_end\_date\_time="06.01.2017 08:06:40">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 10:05:00" operation\_end\_date\_time="02.01.2017 10:55:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 14:36:40" operation\_end\_date\_time="02.01.2017 15:43:20"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 15:53:20" operation\_end\_date\_time="04.01.2017 10:40:00"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="04.01.2017 14:25:00" operation\_end\_date\_time="04.01.2017 14:41:40"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 09:46:40" operation\_end\_date\_time="05.01.2017 10:53:20"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="72" operation\_start\_date\_time="05.01.2017 10:53:20" operation\_end\_date\_time="05.01.2017 13:40:00"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 15:00:00" operation\_end\_date\_time="06.01.2017 08:06:40"/>

</Product>

<Product id="9" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 10:55:00" product\_end\_date\_time="05.01.2017 12:46:40">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 10:55:00" operation\_end\_date\_time="02.01.2017 11:00:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 15:43:20" operation\_end\_date\_time="02.01.2017 15:50:00"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="04.01.2017 10:40:00" operation\_end\_date\_time="04.01.2017 10:56:40"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="04.01.2017 14:41:40" operation\_end\_date\_time="04.01.2017 14:43:20"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:53:20" operation\_end\_date\_time="05.01.2017 11:00:00"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="05.01.2017 11:00:00" operation\_end\_date\_time="05.01.2017 11:16:40"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:40:00" operation\_end\_date\_time="05.01.2017 12:46:40"/>

</Product>

<Product id="10" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 11:00:00" product\_end\_date\_time="06.01.2017 09:13:20">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 11:00:00" operation\_end\_date\_time="02.01.2017 11:50:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 15:50:00" operation\_end\_date\_time="03.01.2017 08:56:40"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 10:56:40" operation\_end\_date\_time="04.01.2017 13:43:20"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="04.01.2017 14:43:20" operation\_end\_date\_time="04.01.2017 15:00:00"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:00:00" operation\_end\_date\_time="05.01.2017 12:06:40"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="70" operation\_start\_date\_time="05.01.2017 12:06:40" operation\_end\_date\_time="05.01.2017 14:53:20"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 08:06:40" operation\_end\_date\_time="06.01.2017 09:13:20"/>

</Product>

</Order>

</Result>

techWithError.xml

<?xml version="1.0" encoding="windows-1251"?>

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<Operation id="102" name="102" duration="400" equipment\_group="1" prev\_operation\_id="101" next\_operation\_id="103"/>

<Operation id="103" name="103" duration="1000" equipment\_group="1" prev\_operation\_id="102" next\_operation\_id="104"/>

<Operation id="104" name="104" duration="100" equipment\_group="1" prev\_operation\_id="103" next\_operation\_id="105"/>

<Operation id="105" name="105" duration="400" equipment\_group="1" prev\_operation\_id="104" next\_operation\_id="106"/>

<Operation id="106" name="106" duration="1000" equipment\_group="2" prev\_operation\_id="105" next\_operation\_id="107"/>

<Operation id="107" name="107" duration="400" equipment\_group="1" prev\_operation\_id="106" next\_operation\_id="0"/>

</TechProcess>

<TechProcess id="2">

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<Operation id="202" name="202" duration="4000" equipment\_group="1" prev\_operation\_id="201" next\_operation\_id="203"/>

<Operation id="203" name="203" duration="10000" equipment\_group="1" prev\_operation\_id="202" next\_operation\_id="204"/>

<Operation id="204" name="204" duration="1000" equipment\_group="1" prev\_operation\_id="203" next\_operation\_id="205"/>

<Operation id="205" name="205" duration="4000" equipment\_group="1" prev\_operation\_id="204" next\_operation\_id="206"/>

<Operation id="206" name="206" duration="10000" equipment\_group="2" prev\_operation\_id="2062" next\_operation\_id="207"/>

<Operation id="207" name="207" duration="4000" equipment\_group="1" prev\_operation\_id="206" next\_operation\_id="0"/>

</TechProcess>

</Detail>

</Order>

</OrderInformation>

resultWithErrors.xml

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

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<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="30.12.2016 08:00:00" operation\_end\_date\_time="30.12.2016 08:51:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="03.01.2017 12:35:00" operation\_end\_date\_time="03.01.2017 13:41:40"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 10:41:40" operation\_end\_date\_time="03.01.2017 13:28:20"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 09:58:20" operation\_end\_date\_time="05.01.2017 10:15:00"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:30:00" operation\_end\_date\_time="05.01.2017 12:36:40"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="70" operation\_start\_date\_time="05.01.2017 12:36:40" operation\_end\_date\_time="05.01.2017 15:23:20"/>

</Product>

<Product id="2" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:50:00" product\_end\_date\_time="06.01.2017 09:43:20">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 08:50:00" operation\_end\_date\_time="02.01.2017 08:55:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:41:40" operation\_end\_date\_time="02.01.2017 13:48:20"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 13:28:20" operation\_end\_date\_time="03.01.2017 13:45:00"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:15:00" operation\_end\_date\_time="05.01.2017 10:16:40"/>

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<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="71" operation\_start\_date\_time="05.01.2017 12:43:20" operation\_end\_date\_time="05.01.2017 13:00:00"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:36:40" operation\_end\_date\_time="06.01.2017 09:43:20"/>

</Product>

<Product id="3" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 08:55:00" product\_end\_date\_time="06.01.2017 09:50:00">

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<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:48:20" operation\_end\_date\_time="02.01.2017 13:55:00"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 13:45:00" operation\_end\_date\_time="03.01.2017 14:01:40"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:16:40" operation\_end\_date\_time="05.01.2017 10:18:20"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:43:20" operation\_end\_date\_time="05.01.2017 12:50:00"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="72" operation\_start\_date\_time="05.01.2017 12:50:00" operation\_end\_date\_time="05.01.2017 13:06:40"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:43:20" operation\_end\_date\_time="06.01.2017 09:50:00"/>

</Product>

<Product id="4" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 09:00:00" product\_end\_date\_time="06.01.2017 09:56:40">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:00:00" operation\_end\_date\_time="02.01.2017 09:05:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="02.01.2017 13:55:00" operation\_end\_date\_time="02.01.2017 14:01:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="03.01.2017 14:01:40" operation\_end\_date\_time="03.01.2017 14:18:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:18:20" operation\_end\_date\_time="05.01.2017 10:20:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:50:00" operation\_end\_date\_time="05.01.2017 12:56:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="05.01.2017 12:56:40" operation\_end\_date\_time="05.01.2017 13:13:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:50:00" operation\_end\_date\_time="06.01.2017 09:56:40"/>

</Product>

<Product id="5" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 09:05:00" product\_end\_date\_time="06.01.2017 12:16:40">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:05:00" operation\_end\_date\_time="02.01.2017 09:55:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 14:01:40" operation\_end\_date\_time="02.01.2017 15:08:20"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="03.01.2017 14:18:20" operation\_end\_date\_time="04.01.2017 09:05:00"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:20:00" operation\_end\_date\_time="05.01.2017 10:36:40"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 12:56:40" operation\_end\_date\_time="05.01.2017 14:03:20"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="71" operation\_start\_date\_time="05.01.2017 14:03:20" operation\_end\_date\_time="06.01.2017 08:50:00"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 11:10:00" operation\_end\_date\_time="06.01.2017 12:16:40"/>

</Product>

<Product id="6" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 09:55:00" product\_end\_date\_time="06.01.2017 13:30:00">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 09:55:00" operation\_end\_date\_time="02.01.2017 10:45:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="02.01.2017 15:08:20" operation\_end\_date\_time="03.01.2017 08:15:00"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 09:05:00" operation\_end\_date\_time="04.01.2017 11:51:40"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:36:40" operation\_end\_date\_time="05.01.2017 10:53:20"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 14:03:20" operation\_end\_date\_time="05.01.2017 15:10:00"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="72" operation\_start\_date\_time="05.01.2017 15:10:00" operation\_end\_date\_time="06.01.2017 09:56:40"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 12:23:20" operation\_end\_date\_time="06.01.2017 13:30:00"/>

</Product>

<Product id="7" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 10:45:00" product\_end\_date\_time="06.01.2017 11:10:00">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 10:45:00" operation\_end\_date\_time="02.01.2017 10:50:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="03.01.2017 08:15:00" operation\_end\_date\_time="03.01.2017 08:21:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="04.01.2017 11:51:40" operation\_end\_date\_time="04.01.2017 12:08:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:53:20" operation\_end\_date\_time="05.01.2017 10:55:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="05.01.2017 15:10:00" operation\_end\_date\_time="05.01.2017 15:16:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="05.01.2017 15:16:40" operation\_end\_date\_time="05.01.2017 15:33:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 11:03:20" operation\_end\_date\_time="06.01.2017 11:10:00"/>

</Product>

<Product id="8" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 10:50:00" product\_end\_date\_time="06.01.2017 14:36:40">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 10:50:00" operation\_end\_date\_time="02.01.2017 11:40:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="03.01.2017 08:21:40" operation\_end\_date\_time="03.01.2017 09:28:20"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 12:08:20" operation\_end\_date\_time="04.01.2017 14:55:00"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 10:55:00" operation\_end\_date\_time="05.01.2017 11:11:40"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="05.01.2017 15:16:40" operation\_end\_date\_time="06.01.2017 08:23:20"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="70" operation\_start\_date\_time="06.01.2017 08:23:20" operation\_end\_date\_time="06.01.2017 11:10:00"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 13:30:00" operation\_end\_date\_time="06.01.2017 14:36:40"/>

</Product>

<Product id="9" product\_id="1" tech\_process\_id="2" product\_start\_date\_time="02.01.2017 11:40:00" product\_end\_date\_time="06.01.2017 15:43:20">

<Operation operation\_id="201" prev\_operation\_id="0" next\_operation\_id="202" equipment\_id="60" operation\_start\_date\_time="02.01.2017 11:40:00" operation\_end\_date\_time="02.01.2017 12:30:00"/>

<Operation operation\_id="202" prev\_operation\_id="201" next\_operation\_id="203" equipment\_id="60" operation\_start\_date\_time="03.01.2017 09:28:20" operation\_end\_date\_time="03.01.2017 10:35:00"/>

<Operation operation\_id="203" prev\_operation\_id="202" next\_operation\_id="204" equipment\_id="60" operation\_start\_date\_time="04.01.2017 14:55:00" operation\_end\_date\_time="05.01.2017 09:41:40"/>

<Operation operation\_id="204" prev\_operation\_id="203" next\_operation\_id="205" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:11:40" operation\_end\_date\_time="05.01.2017 11:28:20"/>

<Operation operation\_id="205" prev\_operation\_id="204" next\_operation\_id="206" equipment\_id="60" operation\_start\_date\_time="06.01.2017 08:23:20" operation\_end\_date\_time="06.01.2017 09:30:00"/>

<Operation operation\_id="206" prev\_operation\_id="2062" next\_operation\_id="207" equipment\_id="71" operation\_start\_date\_time="06.01.2017 09:30:00" operation\_end\_date\_time="06.01.2017 12:16:40"/>

<Operation operation\_id="207" prev\_operation\_id="206" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 14:36:40" operation\_end\_date\_time="06.01.2017 15:43:20"/>

</Product>

<Product id="10" product\_id="1" tech\_process\_id="1" product\_start\_date\_time="02.01.2017 12:30:00" product\_end\_date\_time="06.01.2017 12:23:20">

<Operation operation\_id="101" prev\_operation\_id="0" next\_operation\_id="102" equipment\_id="60" operation\_start\_date\_time="02.01.2017 12:30:00" operation\_end\_date\_time="02.01.2017 12:35:00"/>

<Operation operation\_id="102" prev\_operation\_id="101" next\_operation\_id="103" equipment\_id="60" operation\_start\_date\_time="03.01.2017 10:35:00" operation\_end\_date\_time="03.01.2017 10:41:40"/>

<Operation operation\_id="103" prev\_operation\_id="102" next\_operation\_id="104" equipment\_id="60" operation\_start\_date\_time="05.01.2017 09:41:40" operation\_end\_date\_time="05.01.2017 09:58:20"/>

<Operation operation\_id="104" prev\_operation\_id="103" next\_operation\_id="105" equipment\_id="60" operation\_start\_date\_time="05.01.2017 11:28:20" operation\_end\_date\_time="05.01.2017 11:30:00"/>

<Operation operation\_id="105" prev\_operation\_id="104" next\_operation\_id="106" equipment\_id="60" operation\_start\_date\_time="06.01.2017 09:30:00" operation\_end\_date\_time="06.01.2017 09:36:40"/>

<Operation operation\_id="106" prev\_operation\_id="105" next\_operation\_id="107" equipment\_id="73" operation\_start\_date\_time="06.01.2017 09:36:40" operation\_end\_date\_time="06.01.2017 09:53:20"/>

<Operation operation\_id="107" prev\_operation\_id="106" next\_operation\_id="0" equipment\_id="60" operation\_start\_date\_time="06.01.2017 12:16:40" operation\_end\_date\_time="06.01.2017 12:23:20"/>

</Product>

</Order>

</Result>