Model Engineering Exam 2

APLML:

Figure 1 APLML Metamodel

Figure 2 Hammer Factory Model

Model Transformation:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<factory>
    <assemblyLine name="Handle Production">
        <section name="HP Section" capacity="25">
            <program>
                <moveItem>
                    <from>HP Input</from>
                    <to>HP Section</to>
                </moveItem>
                <splitItem>
                    <length>25.0</length>
                </splitItem>
                <moveItem>
                    <from>HP Section></from>
                    <to>HP Output</to>
                </moveItem>
            </program>
        </section>
    </assemblyLine>
    <assemblyLine name="Head Production">
        <section name="HeP Section" capacity="5">
            <program>
                <moveItem>
                    <from>HeP Input</from>
                    <to>HeP Section</to>
                </moveItem>
                <splitItem>
                    <length>10.0</length>
                </splitItem>
                <moveItem>
                    <from>HeP Section></from>
                    <to>HeP Output</to>
                </moveItem>
            </program>
        </section>
    </assemblyLine>
    <assemblyLine name="Hammer Assembly">
        <section name="HA Section" capacity="75">
            <program>
                <moveItem>
                    <from>HA Input</from>
                    <to>HA Section</to>
                </moveItem>
                <connect/>
                <moveItem>
                    <from>HA Section></from>
                    <to>HA Output</to>
                </moveItem>
            </program>
        </section>
    </assemblyLine>
</factory>
```
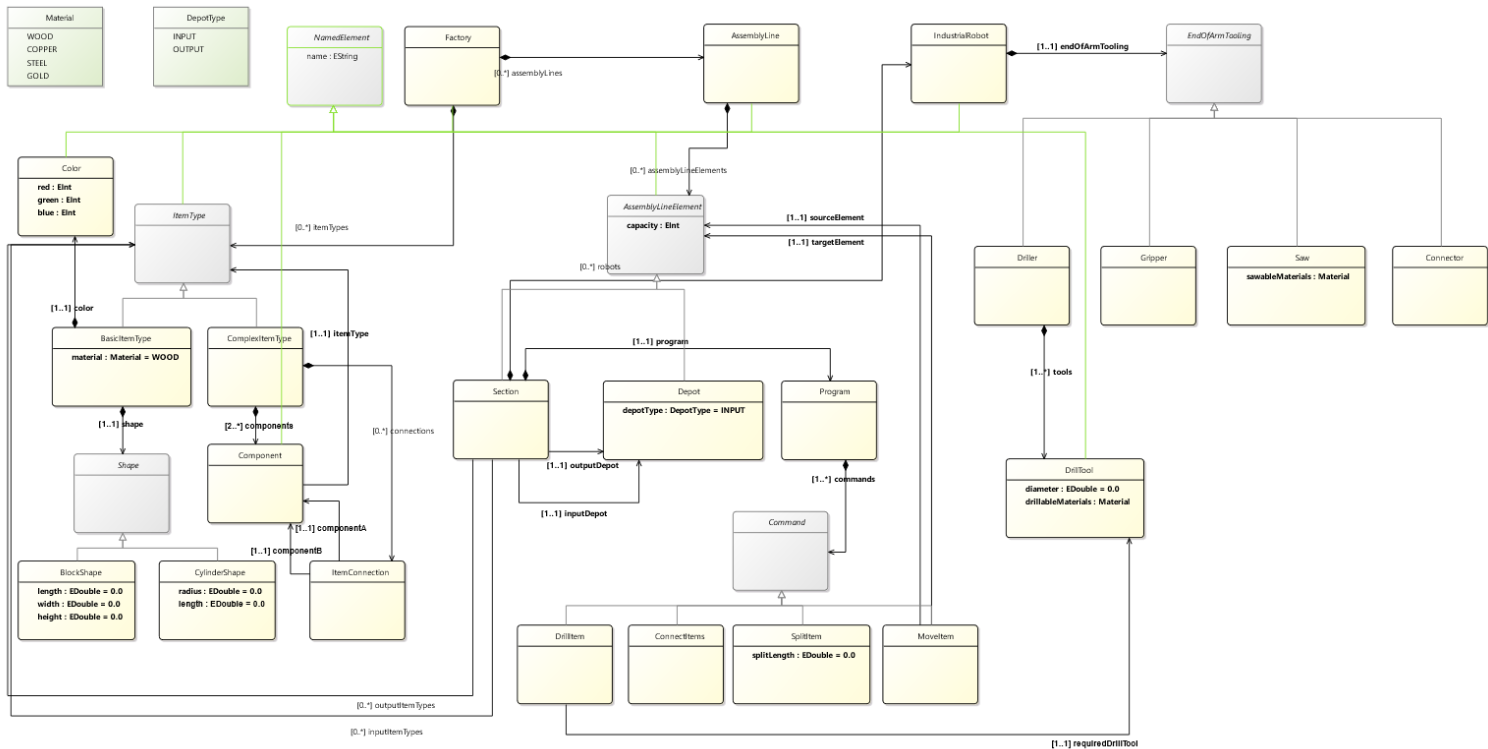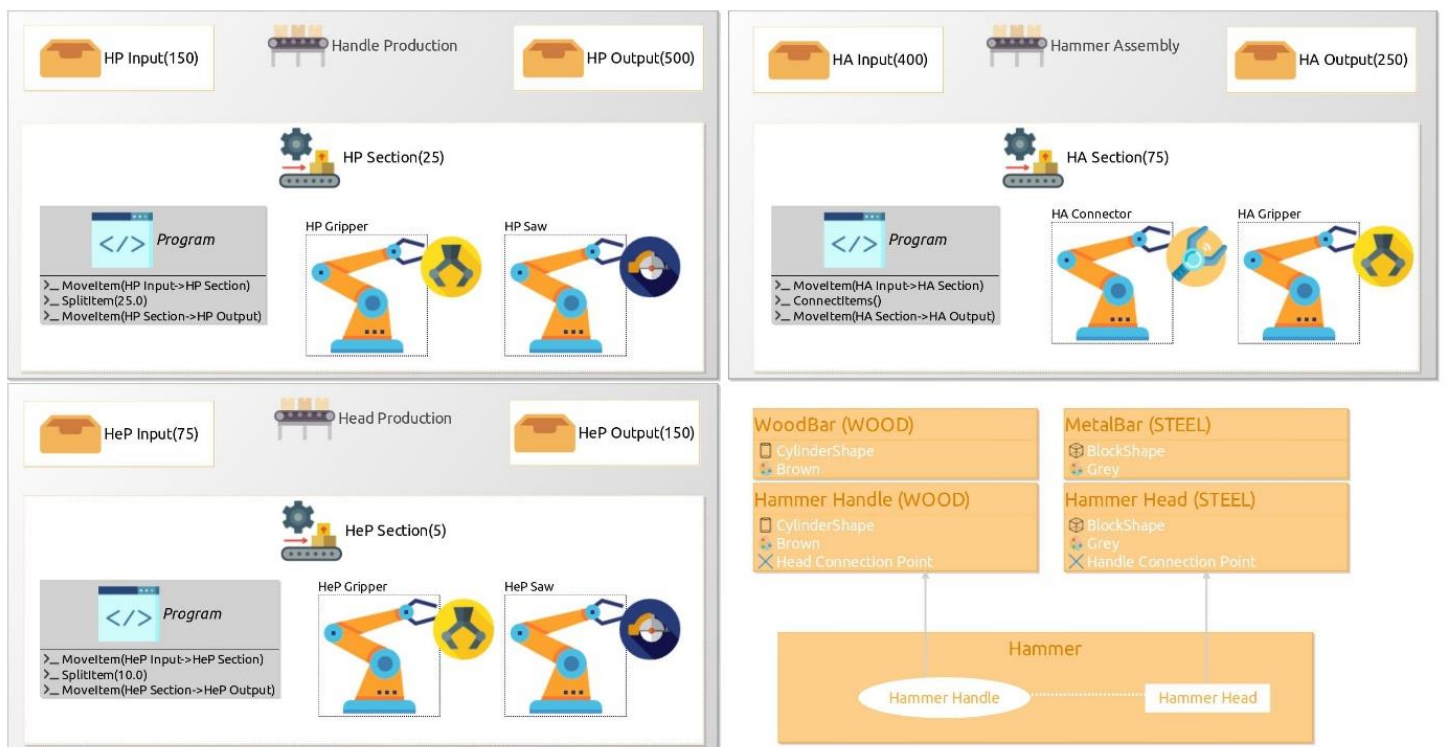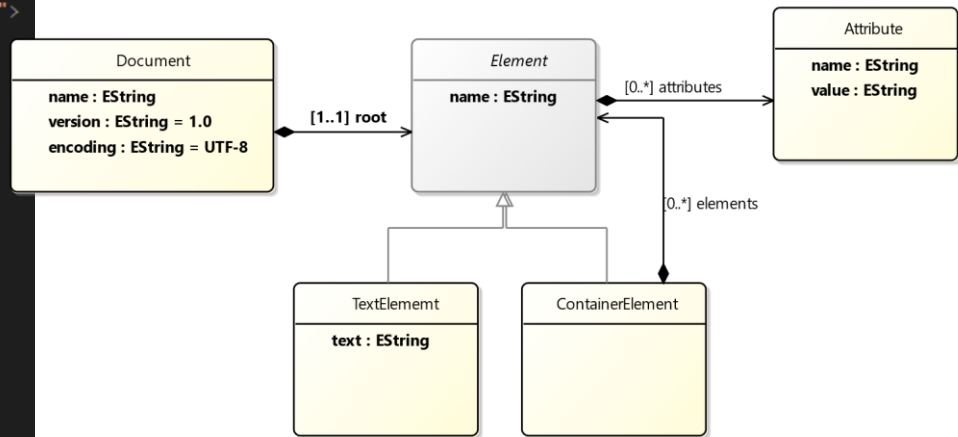
Figure 4 Hammer Factory Simple XML

Figure 3 Simple Xml Metamodel

Code Generation:

```java
public class HpSection extends ApmlSection {

    private HpGripper hpGripper;
    private HpSaw hpSaw;
    private HpInputDepot hpInputDepot;
    private HpOutputDepot hpOutputDepot;

    public HpSection(HpInputDepot hpInputDepot, HpOoutputDepot hpOutputDepot) {
        this.hpInputDepot = hpInputDepot;
        this.hpOutputDepot = hpOutputDepot;
    }

    public void setRobots(HpSaw hpSaw, HpGripper hpGripper) {
        this.hpSaw = hpSaw;
        this.hpGripper = hpGripper;
    }

    public void run() {
        moveItem(this.hpInputDepot, this);
        splitItem(25.0);
        moveItem(this, this.hpOutputDepot);
    }
}
```

Figure 5 HpSection.java code

```java
public class HaSection   extends ApmlSection {

    private HaGripper haGripper;
    private HaConnector haConnector;
    private HapInputDepot haInputDepot;
    private HapOutputDepot haOutputDepot;

    public HaSection(HapInputDepot haInputDepot, HapOutputDepot haOutputDepot) {
        this.haInputDepot = haInputDepot;
        this.haOutputDepot = haOutputDepot;
    }

    public void setRobots(HaConnector haConnector, HaGripper haGripper) {
        this.haConnector = haConnector;
        this.haGripper = haGripper;
    }

    public void run() {
        moveItem(this.haInputDepot, this);
        connect();
        moveItem(this, this.haOutputDepot);
    }
}
```

Figure 6 HaSection.java code

```java
public class HePSection extends ApmlSection {

    private HePGripper hepGripper;
    private HePSaw hepSaw;
    private HepInputDepot hepInputDepot;
    private HepOutputDepot hepOutputDepot;

    public HePSection(HepInputDepot hepInputDepot, HepOoutputDepot hepOutputDepot) {
        this.hepInputDepot = hepInputDepot;
        this.hepOutputDepot = hepOutputDepot;
    }

    public void setRobots(HepSaw hepSaw, HepGripper hepGripper) {
        this.hepSaw = hepSaw;
        this.hepGripper = hepGripper;
    }

    public void run() {
        moveItem(this.hepInputDepot, this);
        splitItem(10.0);
        moveItem(this, this.hepOutputDepot);
    }
}
```

Figure 7 HepSection.java code