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MCA(A)

Web Stack Development

Lab Exercise – 5

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Summary Report of Transformation and Validation Process:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- <!DOCTYPE gamevault SYSTEM "gamevault.dtd"> -->
<!-- <?xml-stylesheet href="tailwind.xsl" type="text/xsl"?> -->
<?xml-stylesheet href="gamevault.xsl" type="text/xsl"?>
<gamevault xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://www.example.com/gamevault" xsi:schemaLocation="http://www.example.com/gamevault
gamevault.xsd">

    <Game1>
        <Name>Valorant</Name>
        <Developer>&RiotGames;</Developer>
        <Publisher>&RiotGames;</Publisher>
        <Genre>Action, Multiplayer, FPS</Genre>
        <Platform>PC</Platform>
        <Rating>9.5</Rating>
        <ReleaseYear>2020</ReleaseYear>
        <Description>Valorant is a team-based first-person tactical hero shooter set in the near future.</Description>
    </Game1>
```

Problem: Missing entity definitions. XML code references entities for developer and publisher, but these entities are not defined, causing parsing errors.

Solution: Added the below code for defining the entity into (.dtd) file.

```
<!ENTITY RockstarGames "Rockstar Games">
<!ENTITY CDProjekt "CD Projekt Red">
<!ENTITY Bethesda "Bethesda Softworks">
<!ENTITY RiotGames "Riot Games">
<!ENTITY Ubisoft "Ubisoft">
<!ENTITY BandaiNamco "Bandai Namco Entertainment">
<!ENTITY SonyInteractive "Sony Interactive Entertainment">
<!ENTITY RPG "Role-Playing Game">
<!ENTITY FPS "First-Person Shooter">
```

Even after fixing the issue for entity declaration, while running the XML file on live server I was facing the following issue as in image:
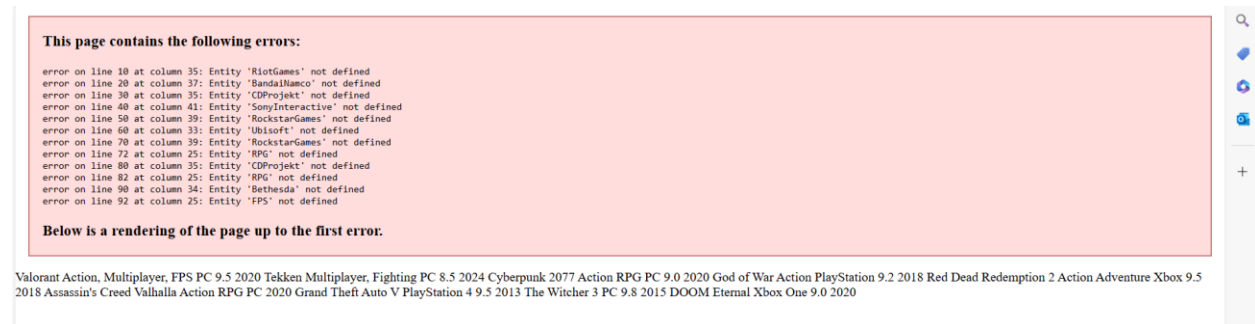
To fix these issues, I searched on google as to what I am doing wrong. It showed me that as to declare anything as entity in XML file we use (&) to declare it correctly and make it visible on server.

So, I corrected the declaration of entity everywhere in the file.

```
<Game1>
    <Name>Valorant</Name>
    <Developer>&amp;Riot Games</Developer>
    <Publisher>&amp;RiotGames</Publisher>
    <Genre>Action, Multiplayer, FPS</Genre>
    <Platform>PC</Platform>
    <Rating>9.5</Rating>
    <ReleaseYear>2020</ReleaseYear>
    <Description>Valorant is a team-based first-person tactical hero shooter set in the near future.</Description>
</Game1>
```

CASES WHERE XML VIOLATED XSD DEFINED RULES AND SHOWS ERRORS:

1. **When ReleaseYear value goes below "2000" and above "2024", XML gives error.**

```
<Game1>
    <Name>Valorant</Name>
    <Developer>&amp;Riot Games</Developer>
    <Publisher>&amp;RiotGames</Publisher>
    <Genre>Action, Multiplayer, FPS</Genre>
    <Platform>PC</Platform>
    <Rating>9.5</Rating>
    <ReleaseYear>1999</ReleaseYear>
    <Description>Valorant is a team-based first-person tactical hero shooter set in the near future.</Description>
</Game1>
```

```
<Game1>
    <Name>Valorant</Name>
    <Developer>&amp;Riot Games</Developer>
    <Publisher>&amp;RiotGames</Publisher>
    <Genre>Action, Multiplayer, FPS</Genre>
    <Platform>PC</Platform>
    <Rating>9.5</Rating>
    <ReleaseYear>2026</ReleaseYear>
    <Description>Valorant is a team-based first-person tactical hero shooter set in the near future.</Description>
</Game1>
```

2. When Rating of any Game goes below "0.0" and exceeds "10.0", XML throws errors.

```
<Game1>
    <Name>Valorant</Name>
    <Developer>&amp;Riot Games</Developer>
    <Publisher>&amp;RiotGames</Publisher>
    <Genre>Action, Multiplayer, FPS</Genre>
    <Platform>PC</Platform>
    <Rating>10.5</Rating>
    <ReleaseYear>2024</ReleaseYear>
    <Description>Valorant is a team-based first-person tactical hero shooter set in the near future.</Description>
</Game1>
```

```
<Game1>
    <Name>Valorant</Name>
    <Developer>&amp;Riot Games</Developer>
    <Publisher>&amp;RiotGames</Publisher>
    <Genre>Action, Multiplayer, FPS</Genre>
    <Platform>PC</Platform>
    <Rating>-1.5</Rating>
    <ReleaseYear>2024</ReleaseYear>
    <Description>Valorant is a team-based first-person tactical hero shooter set in the near future.</Description>
</Game1>
```

Documentation of the whole program:

This set of files serves the purpose of storing and presenting video game data in a structured and user-friendly format.

- **XML data (gamevault.xml):** This file stores information about various video games in a structured format using XML tags. Each game is represented by an element with details like name, developer, publisher, genre, platform, rating, release year, and description.
- **XSD schema (gamevault.xsd):** This file defines the structure of the XML data. It specifies the valid elements, their data types, and any constraints to ensure data integrity.
- **XSL stylesheet (gamevault.xsl):** This file transforms the XML data into a human-readable HTML format. It creates a table with rows and columns displaying information for each game stored in the XML file.

Processing Steps

1. **Validation:** The XML data (gamevault.xml) can be validated against the XSD schema (gamevault.xsd) to ensure it conforms to the defined structure and constraints. This helps identify any errors or inconsistencies in the data before processing.
2. **Transformation:** The XSL stylesheet (gamevault.xsl) is applied to the validated XML data. It extracts information from the XML elements and creates HTML code to structure it into a table.
3. **Output:** The resulting HTML code can be displayed in a web browser, providing a user-friendly view of the game data.

Summary

This set of XML, XSD, and XSLT files provides a mechanism to store, validate, and present video game information in a structured and well-formatted way. The XSD ensures data integrity, and the XSL stylesheet facilitates a user-friendly presentation of the game details.