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Course: CS522
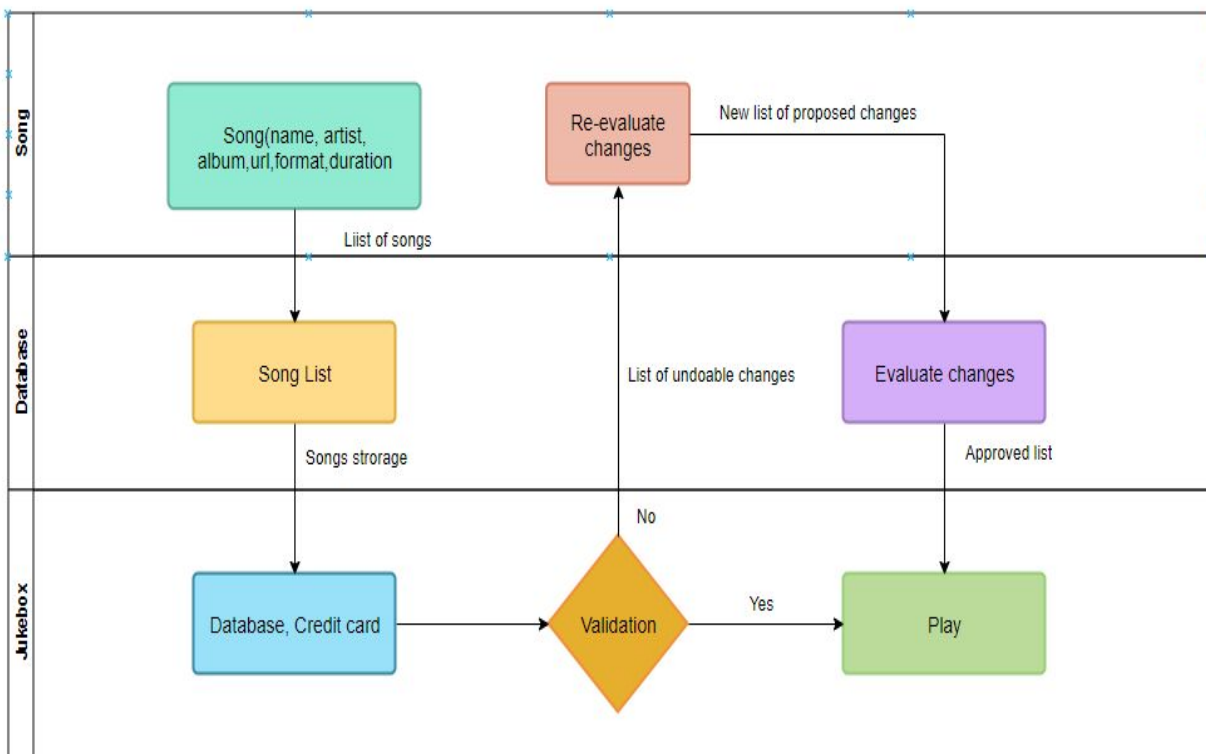Week: 02
Homework Link:
https://npu85.npu.edu/~henry/npu/classes/oo/uml_tutorial/slide/exercise_uml_tutorial.html
Q6 ==> Modified Use Class Diagram

Use Class Diagram:

Program:
3 parts. Database, Song Playlist and Jukebox.

1. Song.java

```java
import java.io.File;
import java.io.FileInputStream;

//import javax.media.*;

import java.net.*;
import java.util.ArrayList;
import java.util.List;
import java.util.Scanner;

import javazoom.jl.player.Player;

public class Song {
    String name;
    String artist;
    String album;
    String url;
    String format;
    // Duration of Song in seconds
    int duration;
    public Song(){

    }
    public Song(String name, String artist, String album, String url,
            String format, int duration) {
        super();
        this.name = name;
        this.artist = artist;
        this.album = album;
        this.url = url;
        this.format = format;
        this.duration = duration;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getArtist() {
        return artist;
    }

    public void setArtist(String artist) {
        this.artist = artist;
    }

    public String getAlbum() {
        return album;
    }

    public void setAlbum(String album) {
        this.album = album;
    }

    public String getUrl() {
        return url;
    }

    public void setUrl(String url) {
        this.url = url;
    }

    public String getFormat() {
        return format;
    }

    public void setFormat(String format) {
        this.format = format;
    }

    public int getDuration() {
        return duration;
    }

    public void setDuration(int duration) {
        this.duration = duration;
    }
    public boolean isLong() {
        return duration>50;
    }
}
```

```java
@Override
public String toString() {
    return "Name: " + this.getName() + "\t" +
            "Artist:" + this.getArtist() + "\t" +
            "Album:" + this.getAlbum() + "\t" +
            "Format:" + this.getFormat() + "\t" +
            "Duration:" + this.getDuration();
}

public void play(){
    try{
        FileInputStream fis = new FileInputStream(this.getUrl());
        Player playMP3 = new javazoom.jl.player.Player(fis);
        playMP3.play();
    }catch(Exception e){
        System.out.println(e);
    }
}
    //Driver
    public static void main(String[] args){
        System.out.println("Creating Song Object");
        Song song1=new Song("Kadhal Cricket", "Kharesma Ravichandran",
                "Thani Oruvan", "Cricket.mp3", "Mp3", 214);
        System.out.println("Playing Song");
        song1.play();

    }
```

2. Database.java

```java
import java.util.ArrayList;
import java.util.List;

public class Database {

    private List<Song> songList;

    Database(){
        this.songList=new ArrayList<Song>();
    }
    Database(List<Song> songList){
        this.songList=songList;
    }

    public List<Song> getSongList() {
        return songList;
    }
    public Song getSongList(int index) {
        if(songList.size()>=index)
            return songList.get(index);
        else
            return null;
    }
    public void setSongList(List<Song> songList) {
        this.songList = songList;
    }

    public boolean isEmpty(){
        return this.songList.isEmpty();
    }
    public void addSong(Song song){
        songList.add(song);
    }
    public void removeSong(Song song){
        if(songList.contains(song)){
            songList.remove(song);
        }
    }
    public void removeSong(int index){
        songList.remove(index);
    }
    private void trace(String s){
        System.out.println(s);
    }

    public String toString(){
        System.out.println("Song List:\n===============");
        for(int i=0;i<songList.size();i++){
            trace(i+":\t"+songList.get(i).toString());
        }
        return "";
    }

    // Henry's comment
    //   Database does not need to have the functionality of play.
    public void play(int index){
        System.out.println("Playing Song : "+ songList.get(index).toString());
        songList.get(index).play();
    }
    public void play(){
        for(int index=0;index<songList.size();index++)
            play(index);
    }

    //Driver
    public static void main(String[] args){
        Song song1=new Song("Kadhal Cricket", "Kharesma Ravichandran",
            "Thani Oruvan", "Cricket.mp3", "Mp3", 214);
        Song song2=new Song("Kannala Kannala", "Kaushik Krish",
            "Thani Oruvan", "Kannala.mp3", "Mp3", 215);
        Song song3=new Song("Kadhal Cricket", "Kharesma Ravichandran",
            "Thani Oruvan", "D://Cricket.mp3", "Mp3", 214);
        List<Song> tempSongList= new ArrayList<Song>();
        tempSongList.add(song2);
        tempSongList.add(song1);

        Database tempDB= new Database(tempSongList);
        tempDB.toString();
        System.out.println("\nAdding Song ");
        tempDB.addSong(song3);
        tempDB.toString();
        System.out.println("Playing Complete SongList");
        tempDB.play();

        System.out.println("Playing Song @ index 2");
        tempDB.play(2);
    }
}
```

3. Jukebox.java

```java
import java.util.ArrayList;
import java.util.List;

public class Jukebox {
    Database db;
    int creditCard;
    public Jukebox(){

    }
    public Jukebox(Database db, int creditCard) {
        super();
        this.db = db;
        this.creditCard = creditCard;
    }
    public Database getDb() {
        return db;
    }
    public void setDb(Database db) {
        this.db = db;
    }
    public int getCreditCard() {
        return creditCard;
    }
    public void setCreditCard(int creditCard) {
        this.creditCard = creditCard;
    }
    public boolean isValidCreditCard(){
        if(creditCard>0)
            return true;
        else
            return false;
    }
    void play(int i) {
        Song song=db.getSongList(i);
        song.play();
    }
    void play() {
        for (int index=0;index<db.getSongList().size();index++)
        {
            Song song=db.getSongList(index);
            trace("Currently Playing :"+song.getName());
            song.play();
        }
    }
    private void trace(String s){
        System.out.println(s);
    }
}
```

```java
//Driver
public static void main(String[] args){
    Song song1=new Song("Kadhal Cricket", "Kharesma Ravichandran",
        "Thani Oruvan", "Cricket.mp3", "Mp3", 214);
    Song song2=new Song("Kannala Kannala", "Kaushik Krish",
        "Thani Oruvan", "Kannala.mp3", "Mp3", 215);
    Song song3=new Song("Kadhal Cricket", "Kharesma Ravichandran",
        "Thani Oruvan", "D://Cricket.mp3", "Mp3", 214);
    List<Song> tempSongList= new ArrayList<Song>();
    tempSongList.add(song1);
    tempSongList.add(song2);
    tempSongList.add(song3);


    Database tempDB= new Database(tempSongList);
    Jukebox j= new Jukebox(tempDB, -123);

    //Validation of Credit Card
    System.out.println("Validity of CC : "+j.isValidCreditCard());
    j.getDb().toString();


    System.out.println("\nDeleting Song @ index 2");
    //Deleting Song @ index 2
    j.getDb().removeSong(2);
    j.getDb().toString();


    System.out.println("Playing the SongList");
    j.play();


    System.out.println("Playing Song @ index 2");
    j.play(2);
}
```