OOPS LAB

Lab 6

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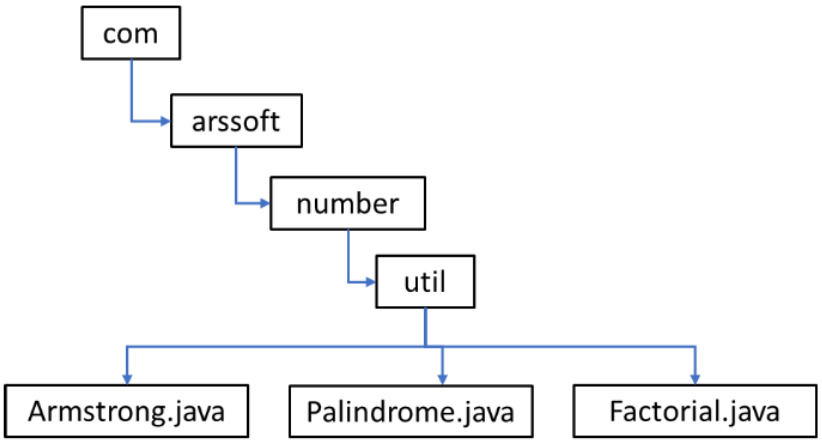
1)

Develop Number Utilities package and provide following classes with supported functionalities:



Develop a NumberUtilTest class to test the Number Utilities package.

Class	Method	Description
Armstrong.java	static boolean armstrong(int n)	returns true if the number 'n' is Armstrong
Palindrome.java	static boolean palindrome(int n)	returns true if the number 'n' is palindrome
Factorial.java	static int factorial(int n)	returns the factorial of the given number 'n'

CODE:

```
package com.arssoft.number.util;
import java.util.*;
public class Amstrong{
public static boolean amstrong(int n){
```

```
int temp;
int digits = 0;
int last = 0;
int sum = 0;
temp = n;
while(temp > 0){
temp /= 10;
digits++;
}
temp = n;
while(temp > 0){
last = temp%10;
sum += Math.pow(last,digits);
temp /= 10;
}
return (sum == n) ? true : false;
}
}
package com.arssoft.number.util;
import java.util.*;
public class Factorial{
public static int factorial(int n){
int fact = 1;
```

```
for(int i = 1; i <= n ; ++i){
fact *= i;
}
return fact;
}
}
package com.arssoft.number.util;
import java.util.*;
public class Palindrome{
public static boolean palindrome(int n){
String num = String.valueOf(n);
String checkNum = "";
for(int i = num.length()-1 ; i >= 0; --i){
checkNum += num.charAt(i);
}
return num.equals(checkNum) ? true : false;
}
}
import com.arssoft.number.util.Palindrome;
import com.arssoft.number.util.Amstrong;
import com.arssoft.number.util.Factorial;
import java.util.*;
public class Test{
```

```
public static void main(String [] args){
System.out.println("Check Palindrome :
"+Palindrome.palindrome(25252));
System.out.println("Check Factorial :
"+Factorial.factorial(10));
System.out.println("Check Amstrong :
"+Amstrong.amstrong(153));
}
}
```

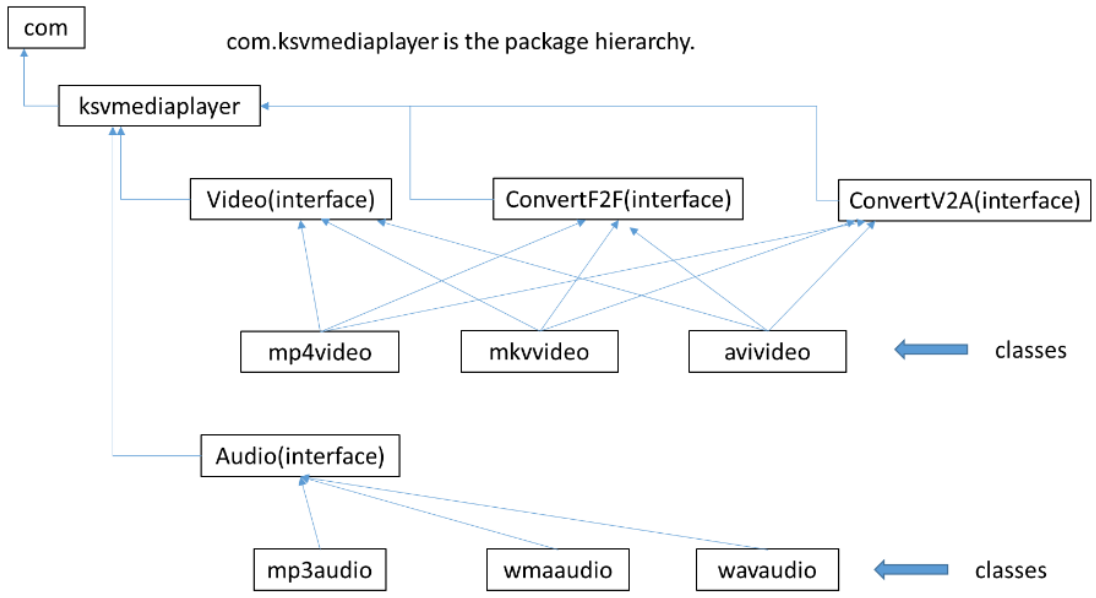
Output:

```
Check Palindrome : true
Check Factorial : 3628800
Check Amstrong : true
```

2)

KSV Company is trying to develop media player to play audio and video formats. It supports as many as formats in both categories. In addition, it supports conversion of one format into another and also support converting video into audio. Develop a **package** with suitable functionalities and interfaces as depicted in the following figure in such a way that any third party can utilize them for their development. Video and Audio interfaces have play() method, and ConvertF2F and ConvertV2A interfaces have format2format(), video2audio() methods respectively.

Develop a KSVMediaPlayerTest class to utilize the KSV company's media player functionality.



Code:

```
package com;
interface Video
{
   abstract void play();
}
package com;
public interface ConvertA2V
{
   abstract void Audio2Video();
}
package com;
public interface ConvertF2F
{
   abstract void Format2Format();
```

```
}
package com;
class mp4video implements Video,ConvertA2V,ConvertF2F
{
    public void play()
    {
        System.out.println("mp4video Play");
    }
    public void Audio2Video()
    {
        System.out.println("mp4video Audio2Video");
    }
    public void Format2Format()
    {
        System.out.println("mp4video Format2Format");
    }
}

package com;


class mkvvideo implements Video,ConvertA2V,ConvertF2F
{
```

```
    public void play()
    {
        System.out.println("mkvvideo Play");
    }

    public void Audio2Video()
    {
        System.out.println("mkvvideo Audio2Video");
    }

    public void Format2Format()
    {
        System.out.println("mkvvideo Format2Format");
    }

}

package com;


class avivideo implements Video,ConvertA2V,ConvertF2F
{
    public void play()
```

```
    {
        System.out.println("avivideo Play");
    }

    public void Audio2Video()
    {
        System.out.println("avivideo Audio2Video");
    }

    public void Format2Format()
    {
        System.out.println("avivideo Format2Format");
    }
}

package com;



public interface Audio
{
    abstract void play();
}
```

```
package com;


class mp3audio implements Audio
{
    public void play()
    {
        System.out.println("mp3audio Play");
    }

}

package com;


class wamaudio implements Audio
{
    public void play()
    {
        System.out.println("wamaudio Play");
    }
}
```

```
package com;


class wavaudio implements Audio
{
    public void play()
    {
        System.out.println("wavaudio Play");
    }
}
```

Output: