

Sesión 1 de Estructura de Datos:

Curso 2012/2013

El objetivo de esta sesión es conocer las estructuras básicas de Python, las listas y las cadenas y ser capaz de implementar un parser. En este ejercicio se procesan datos des de un fichero de entrada y se parsean para conseguir un fichero de salida. La fecha límite de entrega de esta sesión es el día 24-02-2013. Documentar el código.

Ejercicio

En este ejercicio consideramos un fichero (películas100.dat) que contiene una base de datos de películas.

El fichero esta compuesto por varias películas. Cada campo está separado por '|' y si el campo contiene varios elementos, éstos se separan por '&'. Los campos de este fichero son los siguientes:

title, director, cast, producer, writer, country, language, year, genres, votes, rating, runtime, plot, cover url

Por ejemplo en el fichero, la primera película será:

Toy Story|John Lasseter|Hanks, Tom&&Allen, Tim&&Rickles, Don&&Varney, Jim&&Shawn, Wallace&&Ratzenberger, John&&Potts, Annie&&Morris, John&&von Detten, Erik&&Metcalf, Laurie&&Erme, R. Lee&&Freeman, Sarah&&Jillette, Penn&&Angel, Jack&&Aste, Spencer&&Berg, Greg&&Bradley, Lisa&&Cunningham, Kendall&&Derryberry, Debi&&Dorkin, Cody&&Farmer, Bill&&Good, Craig&&Grudt, Gregory&&Judovits, Danielle&&Lasseter, Sam&&Levenbrown, Brittany&&Lynn, Sherry&&McAfee, Scott&&McGowan, Mickie&&O'Donohue, Ryan&&Pidgeon, Jeff&&Pinney, Patrick&&Proctor, Phil&&Rabson, Jan&&Ranft, Joe&&Stanton, Andrew&&Sweet, Shane&&Glæsel, Alexander&&Unkrich, Hannah|Bonnie Arnold&&Ed Catmull&&Ralph Guggenheim&&Steve Jobs|John Lasseter&&Pete Docter&&Andrew Stanton&&Joe Ranft&&Joss Whedon&&Andrew Stanton&&Joel Cohen&&Alec Sokolow|USA|English|1995|Animation&&Adventure&&Comedy&&Family&&Fantasy|133638|8.1|[u'81', u'Turkey:74::(TV version)']|[u'A little boy named Andy loves to be in his room, playing with his toys, especially his doll named "Woody". But, what do the toys do when Andy is not with them, they come to life. Woody believes that he has life (as a toy) good. However, he must worry about Andy\'s family moving, and what Woody does not know is about Andy\'s birthday party. Woody does not realize that Andy\'s mother gave him an action figure known as Buzz Lightyear, who does not believe that he is a toy, and quickly becomes Andy\'s new favorite toy. Woody, who is now consumed with jealousy, tries to get rid of Buzz. Then, both Woody and Buzz are now lost. They must find a way to get back to Andy before he moves without them, but they will have to pass through a ruthless toy killer, Sid Phillips.:John Wiggins', u'Toy Story is about the 'secret life of toys' when people are not around. When Buzz Lightyear, a space-ranger, takes Woody's place as Andy's favorite toy, Woody doesn't like the situation and gets into a fight with Buzz. Accidentaly Buzz falls out the window and Woody is accused by all the other toys of having killed him. He has to go out of the house to look for him so that they can both return to Andys room. But while on the outside they get into all kind of trouble while trying to get home.:Marcos Eduardo Acosta Aldrete", u'Imagination runs rampant when toys become mobile when not watched. Two toys, Woody and Buzz Lightyear despise each other like no other. But, when the toys are separated from their home, a truce is formed between them all in an effort to journey home.:Joshua Davis <xtnb64a@prodigy.com>', u"A toy named Woody has it all. He is practically the leader in Andy's toy room, Bo Peep has the hots for him, and most importantly, he is Andy's favorite toy. But when the clocks strike Andy's birthday, a new toy arrives. Buzz Lightyear, a space cadet who thinks he is a space ranger, (not a toy in a room) instantly wins over Andy, thus becoming Andy's new treasure. But when Woody is accused of knocking Buzz out of the window, he must go into the world and find Buzz, with many delays.:neo101", u"Andy Davis is an ordinary boy. Or so he thought. His baby sister, mother, and he live in a nice little house. The only problem that Andy doesn't know about is his toys.

After he plays with them, they come to life. Woody, Bo Peep, Rex, Slinky, Mr. Potato Head, Hamm, Lenny, Slinky, Mr. Spell, and a few others are his toys. Then, as a rivalry begins between Woody and new toy Buzz.:bookmanjunior"]|http://ia.media-imdb.com/images/M/MV5BMTIyMjcwMjgyMF5BMl5BanBnXkFtZTcwODg0NzAzMQ@@._V1_SX80_SY140_.jpg

Definir una función python `parser` que lea el fichero, y almacene las informaciones de las películas en una matriz multi-dimensional.
Un ejemplo de tal matriz es el siguiente:

| <i>title</i> | <i>director</i> | <i>cast</i> | <i>producer</i> | <i>writer</i> | <i>country</i> | .. | .. | .. | .. | | | | | | |
|------------------|-----------------|--------------|-----------------|---------------|----------------|----|----|----|----|--|--|--|--|--|--|
| Toy Story | John Lasseter | Hanks, Tom | | | | | | | | | | | | | |
| | | Allen, Tim | | | | | | | | | | | | | |
| | | Rickles, Don | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Jumanji | | | | | | | | | | | | | | | |
| Grumpier Old Men | | | | | | | | | | | | | | | |

La función `parser` devolverá la estructura creada al programa `main()` e imprimirá por pantalla toda la estructura. A continuación teneis un trozo del código.

```
def parser():
    # Aquí poneis vuestro código de lectura del fichero de datos
    # Controlad la excepción de si hay algun error con el fichero
    # Leed todos los datos del fichero y guardad esa información en la estructura
    # retornad la estructura al final de todo

def main():

    estructuraDatos = [] # estructura con los datos
    estructuraDatos = parser() #la función parser devolverá esta estructura con los datos
    for campo in estructuraDatos:
        #para cada campo fila de la estructura, imprimir sus columnas

main()
```

NOTA: La entrega de la sesión ha de ser un único fichero python (NombreApellidos_Sesion1.py) con el código de la entrega oportunamente comentado. El fichero debe ser colgado en el Campus Virtual dentro del límite de tiempo predefinido.