

Lenguajes de Programación

20 de enero de 2014

Proyecto de Haskell

Grupo 13

Integrante:

Jonathan Mendieta

Procesamiento de Archivo wurfl: Device Browser

1. INTRODUCCION:



Este proyecto se basa en la lectura y obtención de items de un archivo xml, en donde se obtiene ciertos datos que pide el usuario, el archivo xml se basa en una lista de dispositivos, en donde cada uno de ellos posee características que los definen.

El proyecto se lo realizó en HASKELL, un lenguaje funcional en donde la manejabilidad en listas y tuplas lo hacen sumamente fuerte para este tipo de problemas.

La recursión, también es fuerte, lo que permite con gran facilidad el manejo y lectura de datos presentes en las listas y/o tuplas.

2. OBJETIVOS:

Los objetivos son:

- Aprender HASKELL: su utilidad, sus ventajas, su sintaxis.
- Utilizar un adecuado control en la búsqueda de datos.
- Técnicas de parseo en xml

3. PROGRAMA:

El programa empieza con un menú, en donde se debe elegir que opción el usuario quiere ingresar sea para buscar en el xml o requerir la información del desarrollador.

Este estará esperando por la opción del usuario, y ejecutará lo elegido, exceptuando un ingreso no válido de opciones.

```

Jonathan@Glados: ~/Haskell Programs
haiku.txt~      hello.hs~      test.txt~
Haskell Programs.zip  proyecto_Haskell_Jonathan_Mendieta.hs  wurfl-2.3.xml
Jonathan@Glados:~/Haskell Programs$ runhaskell proyecto*

8888b.  888888 Yb  dP 88 dP"b8 888888
 8I  Yb 88  Yb dP 88 dP  ` 88
 8I  dY 88"  YbdP 88 Yb  88"
8888Y" 888888  YP  88  YboddP 888888

88"Yb 88"Yb dP"Yb Yb  dP .dP"Y8 888888 88"Yb
88_dP 88_dP dP Yb Yb db dP `Ybo." 88 88_dP
88"Yb 88"Yb Yb dP YbdPYbdP o.`Y8b 88" 88"Yb
88oodP 88 Yb YboddP YP YP 8boddP' 888888 88 Yb

Menu:
    1.Search by Manufacturer
    2.Search by Resolution
    3.Search by Queries
    4.Developer Information
    5.Exit Program

Select Option:

```

Si el usuario ingresa la opcion 1, entonces el programa presentara en una lista todos los fabricantes de los dispositivos (brand name).

```

Jonathan@Glados: ~/Haskell Programs
Amoi", "Android", "AnexTek", "Apanda", "Apple", "Archos", "Asmobile", "Asus", "Audiovox",
, "Avvio", "B-Mobile", "BEKO", "BarnesandNoble", "BayMobile", "Becker", "Beetel", "Bellw
ave", "BenQ", "BenQ-Siemens", "Bird", "Bleu", "BlueCoat", "BrilliantelMobileCommunicat
ions", "CDM", "CECT", "COBY", "Capitel", "Casio", "CheckCom", "Cheer", "Chunghwa", "Cinci
nnatiBell", "Cingular", "Cking", "Coby", "Compal", "Coolpad", "CoralWeb", "Cricket", "DB
TEL", "DC", "Dallab", "Danger", "Daxian", "Dell", "Desktop", "Dicam", "Dmobo", "DoCoMo", "
Dopod", "Doris", "EDL", "ETEN", "EZIO", "Elite", "Elson", "Emblaze", "Engeton", "Emobile",
, "Enteos", "Era", "Ericsson", "Ericy", "Ezze", "FLY", "Fitel", "Fly", "Fujitsu", "Fujitsu
Toshiba", "G-Fone", "Garmin-Asus", "Generic", "GenericWindows", "Gigabyte", "Ginovo", "
Gionee", "Google", "Gradiente", "Grundig", "HD", "HEDY", "HEI", "HP", "HTC", "HTCCorporat
ion", "HTIL", "Haier", "Hei", "Helio", "Hisense", "Hitachi", "Huawei", "Hummer", "IACOKWA
P", "IM", "INNO", "INQMobile", "IXI", "Infineon", "InfoSonics", "Innostream", "Intelco", "
K-Touch", "KCM", "KDDI", "KDDI-Kyocera", "KDDI-Sanyo", "KDDI-SonyEricsson", "KDDI-Tosh
iba", "KPT", "KTech", "Karbonn", "Kejian", "Kisen", "Klondike", "Konka", "Kozi", "Kyocer
a", "LCT", "LG", "LGE", "LNexian", "LT", "LXE", "Lemon", "Lenovo", "LenovoMobile", "Lexibo
ok", "Lexus", "Lobster", "LogicPD", "Logitech", "Longcos", "Lynx", "M3Gate", "MAUI-based
Generic", "MOBISTEL", "MOMODesign", "MOTOROLA", "Malata", "Maxon", "Maxx", "Medion", "Me
tzu", "Micromax", "Microsoft", "Mio", "Miracle", "Mitac", "Mitsubishi", "Mobell", "Mobil
eWirelessGroup", "ModeLabs", "Modottel", "Modu", "Morange", "Motorola", "MyPhone", "NEC
", "NGM", "Nec", "Nem", "Neonode", "Newgen", "Nexian", "Nextbook", "Nintendo", "Nokia", "N
ovarra", "O2", "ONDA", "OPPO", "Olive", "Olivetti", "Onda", "Openwave", "Opera", "Optimay
", "Orange", "PCD", "Palm", "Palm3", "Panasonic", "Panda", "Pantech", "Philips", "PhoneOn
e", "Pirelli-Arcor", "Polaris", "Polytron", "Pston", "QCI", "QMobile", "Qtek", "RIM", "RI
", "Raks", "Reporo", "Robot", "Ron", "RoverPC", "SAMART", "SAMARTi-mobile", "SKTelesys",
, "SPC", "Sagem", "Samsung", "Sanyo", "Sendo", "Sharp", "Siemens", "Skybee", "Skyfire", "Sk
yspring", "Skyworth", "SlobTrotSoftware", "SmartQ", "SmartTrust", "Smile", "Softbank",
, "Sonin", "Sony", "SonyEricsson", "Spice", "Sprint", "Sunrise", "T-Mobile", "TCL", "TINNO
", "TTPCom", "TX", "TaiwanMobile", "Techfaith", "Tecno", "Tel.Me.", "TelecomItalia", "Te
lit", "TiPhone", "Tianyu", "Tinno", "Toplux", "Toshiba", "Tranxcode", "UCWEB", "UKING", "
UTStarcom", "Ubiquam", "Uniscope", "Unistar", "Uriver", "Ushalexus", "Utec", "VERZIWOR
LD", "VKMobile", "VODAFONE", "Vacom", "VelocityMicro", "VelocityMobile", "Venera", "Ver
izon", "Vertu", "VeryKool", "Vibo", "VideoCon", "Videocon", "ViewSonic", "Vitelcom", "Vo
dafone", "VodafoneZTE", "Voxtel", "W3C", "WAPUniverse", "Wapamp", "Wapsilon", "Wellcom",
, "WinWAPTechnologies", "WindowsMobile", "Wonu", "XDeviceEmulator", "XJXN", "Yas", "ZT",
, "ZTE", "Zen", "Zenithink", "Zonda", "eTouch", "i-mate", "i-mobile", "iKoMo", "kddi", "tv
Compass"]

Pick the Manufacturer to browse:

```

Como ejemplo elegi al fabricante "Nokia", a continuación se mostrará los dispositivos de tal fabricante.

```
Jonathan@Glados: ~/Haskell Programs
Compass"]

Pick the Manufacturer to browse:
Nokia

Manufacturer devices:
["100","1108","1110","1110i","1220","1606","1680classic","1682c","2100","2115i",
"2220slide","2320classic","2323c-2","2330classic","2355","2600classic","2605","2
680","2690","2700classic","2710","2720fold","2730classic","3110","3208classic","
3210","3220","3230","3250","3250","3310","3410","3500c","3555c","3600slide","361
0a","3650","3710","3711","402","500","5000","5000d","5070b","5130","5140i","5146
","5200","5200","5220","5220","5228","5232","5233","5235","5236","5238","5250","
5300","5300","5310XpressMusic","5320XpressMusic","5330MobileTVediton","5510","5
530","5610","5630","5700","5730","5800XpressMusic","5800d","5800i","5800iXpressM
usic","5802","600","6020","6020","603","6030b","6085","6085","6086","6101","6101
","6111","6120ci","6122c","6124classic","6130","6131","6133","6150","6185","6208
classic","6210","6215i","6220classic","6225i","6230i","6230i","6230i","6233","62
36i","6267","6282","6300","6300","6300","6300i","6301","6303","6305i","6315i","6
320i","6350","6600","6600fold","6600slide","6620","6630","6681","6681","6700cla
ssic","6700slide","6720","6730classic","6750Mural","6760slide","6790","700","701
","7020","7070","7205","7210","7310","7500","7510","7610","7610","7610Supernova"
,"770","7705","7900","8210","8290","8810","8850","9300i","C1-01","C1-02","C2-00"
,"C2-01","C2-02","C2-03","C2-05","C2-06","C3-00","C5-005MP","C5-01","C5-03","C5-
04","C5-05","C5-06","C6-00","C6-01","C7-00","E5-00","E52","E55","E6-00","E63","E
7-00","E71","E71x","E72","E73Mode","E75","GenericMaemo","N72","N73","N73","N73-2
","N76","N7612s","N78","N8-00","N800","N818GB","N85","N9","N90","N900","N958GB"
,"N97mini","NK600i","NK601i","X2-00","X2-01","X2-02","X3-00","X3-02","X5-00","X5-
01","X7-00"]

Which device do you wish to browse information?:
6620
```

El programa mostrará la información del dispositivo a elegir, como ejemplo se eligió el modelo 6620.

```
Jonathan@Glados: ~/Haskell Programs
01","X7-00"]

Which device do you wish to browse information?:
6620

Device Information:

uaprof http:nds1.nds.nokia.comuaprofN6620r200.xml
model_name 6620
_os_version 7.0s
release_date 2004_january

display
physical_screen_height 41
columns 15
physical_screen_width 34
resolution_height 208
resolution_width 176

image_format
colors 65536

object_download
wallpaper_colors 16
picture_colors 16
video true
ringtone_aac true

sound_format
aac true

mms
mms_max_size 107250
mms_vcalendar true

j2me
j2me_bits_per_pixel 16
j2me_mpeg4 true
j2me_screen_height 208
```

Ahora se muestra la opción 2, en donde el programa pedirá al usuario que ingrese el fabricante de la lista.

```

jonathan@Glados: ~/Haskell Programs
2.Search by Resolution
3.Search by Queries
4.Developer Information
5.Exit Program

Select Option:
2
["ACERCorporation", "AI", "ALCATEL", "ARCELIK", "Access", "Acer", "AcerIncorporated", "
Ahong", "Airness", "Alcatel", "AlphaCellWireless", "Amazon", "Amoi", "Android", "Apanda
", "Apple", "Archos", "Asmobile", "Asus", "Audiovox", "B-Mobile", "BEKO", "BarnesandNobl
e", "BayMobile", "Beetel", "Bellwave", "BenQ", "BenQ-Siemens", "Bird", "Bleu", "Brillian
telMobileCommunications", "CDM", "CECT", "COBY", "Cingular", "Cking", "Coolpad", "Crick
et", "DBTEL", "Danger", "Dell", "Desktop", "Dmobo", "DoCoMo", "Dopod", "Doris", "EDL", "ET
EN", "EZIO", "Elite", "Elson", "Emblaze", "Emgeton", "Ezze", "FLY", "Fitel", "Fly", "Fujit
su", "FujitsuToshiba", "G-Fone", "Garmin-Asus", "Generic", "Gigabyte", "Ginovo", "Gione
e", "Google", "Gradiente", "Grundig", "HEDY", "HP", "HTC", "HTCCorporation", "HTIL", "Hal
er", "Hello", "Hisense", "Hitachi", "Huawei", "Hummer", "IACOKWAP", "IM", "INNO", "INQMob
ile", "IXI", "Infineon", "InfoSonics", "Innostream", "Itelco", "K-Touch", "KCM", "KDDI",
"KDDI-Sanyo", "KDDI-SonyEricsson", "KDDI-Toshiba", "KPT", "Karbonn", "Kisen", "Konka",
"Kozi", "Kyocera", "LCT", "LG", "LNexian", "LT", "LXE", "Lemon", "Lenovo", "LenovoMobile",
"Lobster", "Lynx", "MAUI-basedGeneric", "MOBISTEL", "MOTOROLA", "Maxon", "Maxx", "Micr
omax", "Microsoft", "Mitac", "Mitsubishi", "Mobell", "MobileWirelessGroup", "ModeLabs",
"Modottel", "Modu", "Motorola", "MyPhone", "NEC", "NGM", "Nec", "Neonode", "Newgen", "Ne
xian", "Nextbook", "Nintendo", "Nokia", "Novarra", "O2", "ONDA", "OPPO", "Olive", "Olivet
ti", "Onda", "Openwave", "Opera", "Orange", "PCD", "Palm", "Panasonic", "Panda", "Pantech
", "Philips", "PhoneOne", "Pirelli-Arcor", "Polaris", "Polytron", "QMobile", "Qtek", "RI
M", "RT", "Raks", "SAMART", "SAMARTi-mobile", "SPC", "Sagen", "Samsung", "Sanyo", "Sendo",
"Sharp", "Siemens", "Skybee", "Skyfire", "Skyspring", "Skyworth", "SlobTrotSoftware",
"SmartQ", "Smile", "Softbank", "Sonim", "Sony", "SonyEricsson", "Spice", "Sprint", "T-Mo
bile", "TCL", "TINNO", "TTPCom", "Tecno", "Tel.Me.", "Telit", "TiPhone", "Tianyu", "Tinn
o", "Toplux", "Toshiba", "UCWEB", "UKING", "UTStarcom", "Ubiquam", "Uniscope", "Unistar",
"Uriver", "UshaLexus", "Utec", "VERZIOWorld", "VKMobile", "VODAFONE", "Vacom", "Velocit
yMicro", "VelocityMobile", "Venera", "Verizon", "Vertu", "Vibo", "VideoCon", "Vitelcom",
"Vodafone", "VodafoneZTE", "Voxtel", "W3C", "WellcoM", "WinWAPTechnologies", "Windows
Mobile", "Wonu", "ZT", "ZTE", "Zen", "Zonda", "eTouch", "i-mate", "i-mobile", "iKoMo", "kd
di", "tvCompass"]

Pick the Manufacturer to browse:

```

Nuevamente se eligió Nokia, ahora el programa se encargará de mostrarnos las resoluciones disponibles de sus dispositivos.

```

jonathan@Glados: ~/Haskell Programs
["Vodafone", "VodafoneZTE", "Voxtel", "W3C", "WellcoM", "WinWAPTechnologies", "Windows
Mobile", "Wonu", "ZT", "ZTE", "Zen", "Zonda", "eTouch", "i-mate", "i-mobile", "iKoMo", "kd
di", "tvCompass"]

Pick the Manufacturer to browse:
Nokia

Available Resolutions for Nokia:
["128x128", "128x160", "176x208", "176x220", "208x208", "240x320", "240x360", "320x240",
"352x416", "360x640", "600x352", "640x208", "640x360", "640x480", "800x480", "854x480",
"96x65"]

Now put the desired resolution as widthxheight:

```

Y como proceso final, el programa mostrará los dispositivos que contienen tal resolución en una lista.

```
Jonathan@Glados: ~/Haskell Programs
["128x128","128x160","176x208","176x220","208x208","240x320","240x360","320x240",
,"352x416","360x640","600x352","640x200","640x360","640x480","800x480","854x480",
,"96x65"]

Now put the desired resolution as widthxheight:
240x360

Manufacturer: Nokia

Devices with the selected resolution:
["5232"]

THANKS FOR USING DEVICE BROWSER
```

Bueno, ahora se mostrará la opción 3 de mostrar el número y nombre de dispositivos que cumplen con los queries: brand_name Nokia y jpg true.

```
Jonathan@Glados: ~/Desktop/Proyecto_Haskell/Programa_Proyecto_Haskell_Jonathan_
Select Option:
3

Enter the queries you wish to browse:

Enter first query:
brand_name Nokia
Enter second query:
jpg true
Enter third query:

Processing...

Number of devices found:176
["1108","1680 classic","1682c","2100","2220 slide","2320 classic","2323c-2","233
0 classic","2600 classic","2605","2680","2690","2700 classic","2710","2720 fold",
,"2730 classic","3110","3208 classic","3220","3230","3250","3310","3500c","3555c",
,"3600 slide","3610a","3710","3711","500","5000","5000d","5070b","5130","5140i",
,"5200","5220","5228","5232","5233","5235","5236","5238","5250","5300","5310 Xpr
essMusic","5320 XpressMusic","5330 Mobile TV Edition","5530","5610","5630","5700",
,"5730","5800 XpressMusic","5800d","5800i","5800i XpressMusic","5802","600","60
20","603","6030b","6085","6101","6111","6120ci","6122c","6124 classic","6131","6
133","6208 classic","6210","6215i","6220 classic","6230i","6233","6236i","6267",
,"6282","6300","6300i","6301","6303","6305i","6315i","6350","6600","6600 fold","6
600i slide","6620","6630","6681","6700 classic","6700 slide","6720","6730 classi
c","6750 Mural","6760 slide","6790","700","701","7020","7070","7210","7310","750
0","7510","7610","7610 Supernova","7705","7900","9300i","C1-01","C1-02","C2-00",
,"C2-01","C2-02","C2-03","C2-05","C2-06","C3-00","C5-00 5MP","C5-01","C5-03","C5-
04","C5-05","C5-06","C6-00","C6-01","C7-00","E5-00","E52","E55","E6-00","E63","E
7-00","E71","E71x","E72","E73 Mode","E75","N72","N73","N73-2","N76","N7612s","N7
8","N8-00","N800","N81 8GB","N85","N900","N95 8GB","N97 mini","NK600i","X2-00","
X2-01","X2-02","X3-00","X3-02","X5-00","X5-01","X7-00"]

THANKS FOR USING DEVICE BROWSER
```

Como ultima opcion se mostrará el nombre del desarrollador del programa.

```

jonathan@Glados: ~/Haskell Programs
8I  Yb 88__  Yb  dP 88 dP  ` " 88__
8I  dY 88""  YbdP 88 Yb 88""
8888Y" 888888  YP 88 YboodP 888888

88""Yb 88""Yb dP"Yb Yb dP .dP"Y8 888888 88""Yb
88__dP 88__dP dP Yb Yb db dP `Ybo." 88__ 88__dP
88""Yb 88""Yb Yb dP YbdPYbdP o.`Y8b 88"" 88""Yb
88oodP 88 Yb YbodP YP YP 8bodP' 888888 88 Yb

Menu:
    1.Search by Manufacturer
    2.Search by Resolution
    3.Search by Queries
    4.Developer Information
    5.Exit Program

Select Option:
4

Developed in HASKELL by Jonathan Mendieta
    Student in ESPOL
    Programming Language Project

```

4. FUNCIONES:

Las funciones usadas en haskell para que esto sea posible:

–spliterInicial : Funcion para separar los devices de la cabecera principal
spliterInicial :: [Char] - [[Char]]

–getNames : Funcion que separa cada nombre y modelo de device en una lista
getNames :: [[Char]] - [[(Char),[Char]]]

–searchDevicesforGeneric : Funcion que obtiene devices con modelo y fabricante
searchDevicesforGeneric :: [[Char]] - [[Char]]

–cleanContent : Funcion que limpia el contenido del xml como lo son los caracteres especiales
cleanContent :: [[Char]] - [[Char]]

–groupDevicebyManufacturer : Funcion que busca los devices por fabricante y los bota en una lista
groupDevicebyManufacturer :: [Char] - [[(Char),[Char]]] - [[Char]]

–groupManufacturer : Funcion que bota los Fabricadores ordenados y sin repeticion
groupManufacturer :: [[(Char),[Char]]] - [[Char]]

–deviceInformation : Funcion bota en un string la informacion del dispositivo
deviceInformation :: [Char] - [(((Char),[Char]),[Char])] - [Char]

`-groupDevicebyResolution` : Funcion que valida devices con resoluciones anchoxalto
`groupDevicebyResolution` :: $(((\text{Char}],\text{Char}],\text{Char}))) - [[\text{Char}]]$

`-groupDevicewithResolution` : Funcion que junta cada device con su respectiva resolucio
`groupDevicewithResolution` :: $[[\text{Char}]] - [([\text{Char}],\text{Char}],\text{Char}]]$

`-manufacturerwithResolution` : Funcion que imprime los fabricantes con resolucio
`manufacturerwithResolution` :: $[[([\text{Char}],\text{Char}],\text{Char}]] - [[\text{Char}]]$

`-devicewithResolution` : Funcion que imprime las resoluciones por device
`devicewithResolution` :: $[\text{Char}] - [([\text{Char}],\text{Char}],\text{Char}]] - [[\text{Char}]]$

`-deviceByResolution` : Funcion que bota en una lista los dispositivos con la resolucio
`deviceByResolution` :: $[\text{Char}] - [\text{Char}] - [([\text{Char}],\text{Char}],\text{Char}]] - [[\text{Char}]]$

`-searchbyQuery` : Funcion que busca dispositivos por los queries proveidos y los bota
`searchbyQuery` :: $[\text{Char}] - [\text{Char}] - [\text{Char}] - [[\text{Char}]] - [[\text{Char}]]$

`-printDevicesbyQuery` : Funcion que imprime los dispositivos que cumplen con los que-
`printDevicesbyQuery` :: $[[\text{Char}]] - [[\text{Char}]]$