

Índex de continguts

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Entorn de desenvolupament

Prerequisits:

- Mac OS 10.7.4 + JRE 1.6¹ + XCode 4.3.x + XCode command line tools + MacPorts²

Instal·lar Python i els paquets necessaris de Python través de MacPorts:

```
# xcode-select -switch /Applications/Xcode.app/Contents/Developer/
# port selfupdate; port upgrade outdated; port uninstall inactive
# port install python27
# port install py27-htmldocs
# port install py27-numpy
```

Instal·lar l'IDE NetBeans 6.9.1³, a continuació instal·lar des de l'IDE el complement “Python” (Eines > Complementos > Complementos disponibles > Python).

Afegir una nova plataforma de Python que etiqueti a la de MacPorts. Dins de l'IDE anar a “Eines > Python Platforms” i crear una nova plataforma on el binari es troba en:

```
/opt/local/Library/Frameworks/Python.framework/Versions/2.7/bin/python
```

NOTA:

En obrir el projecte python de la PAC, en les propietats del projecte establir la plataforma python configurada en el pas previ (Category: Python > Python Platform : [etiqueta plataforma python]).

Exercici 1

Estructura de dades (ED) utilitzada:

ED preferències alumnes:

```
diccionari alumnes[k][v1, v2, v3]
alumnes[k]=idAlumne (int)
alumnes[k][v1]= diccionari preferencies_grup
alumnes[k][v2]= diccionari preferencies_optativa

preferencies_grup[k]={primer, segon}
preferencies_optativa[k]={primera, segona, tercera}
alumnes[k][v3]= booleà frances a 3er?
```

1 JRE for Lion: http://support.apple.com/es_ES/downloads/#macos

2 MacPorts for Lion: <http://www.macports.org/>

3 IDE NetBeans 6.9.1: http://netbeans.org/downloads/6.9.1/index.html?pagelang=ca_ES

ED solucions:

```
assignacions_grup:= diccionari[k][v1]
assignacions_grup[k]=idGrup
assignacions_grup[k][v1]=llista idAlumne (int)

assignacions_optativa:= diccionari[k][v1]
assignacions_optativa[k]=idOptativa
assignacions_optativa[k][v1]=llista idAlumne (int)
```

Sortida activitat1.py:

Activitat 1

Llegint dades del fitxer...

Llistat alumnes:

[id]	[1er grup]	[2on grup]	[1ra opt.]	[2na opt.]	[3ra opt.]	[FR3 ?]
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[2]	[humanistic]	[cientific]	[llati]	[informatica]	[teatre]	[False]
[3]	[humanistic]	[artistic]	[teatre]	[frances]	[informatica]	[True]
[4]	[humanistic]	[tecnologic]	[informatica]	[frances]	[teatre]	[False]
[5]	[tecnologic]	[cientific]	[informatica]	[frances]	[llati]	[False]
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[8]	[tecnologic]	[humanistic]	[informatica]	[teatre]	[frances]	[True]
[9]	[tecnologic]	[humanistic]	[informatica]	[llati]	[teatre]	[True]
[10]	[cientific]	[tecnologic]	[teatre]	[llati]	[informatica]	[False]
[11]	[humanistic]	[tecnologic]	[teatre]	[frances]	[informatica]	[True]
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-- -----

```

Generant una solucio aleatoria...

Assignacio:

```

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-- -----
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```

```

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-- -----

```

Exercici 2

El valor de la funció de càlcul de l'error suma els errors acumulats en l'assignació aleatòria, per controlar el pes de cada tipus d'error es poden especificar en el diccionari:

```
violacions_puntuacio = {'lleu':10 ** 0, 'greu':10 ** 1, 'molt greu':10 ** 2}
```

en la que inicialment s'assigna un pes major segons la criticitat de l'error.

Sortida activitat2.py:

Activitat 2

Llegint dades del fitxer...

Generant una solució aleatòria...

```
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--  -
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[ 2][tecnologic][teatre     ]
[ 3][cientific ][llati      ]
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[ 6][tecnologic][teatre     ]
[ 7][artistic   ][informatica]
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[19][tecnologic][llati      ]
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```

```

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```

-- -----
Error: 9589

Generant una solucio aleatoria...

```

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```

```

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```

Error: 6324

Exercici 3

Sortida activitat3.py:

Activitat 3

Llegint dades del fitxer...

Generant una solucio aleatoria...

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Error: 78252

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Temps reccoccio simulada: 142.77 segons

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Error: 52418

Exercici 4

Dels resultats obtinguts es denota que si s'utilitza una mida de població reduïda després de passar per moltes generacions la població es deteriora, Altrament quan s'amplia el nombre de membres en la població s'evita l'estancament en mínims locals, per evitar aquest fet també s'han implementat una mutació en els descendents. La relació temporal del cost de còmput és lineal en augmentar la mida de la població o el nombre de generacions.

Sortida activitat4.py:

[Mida poblacio]	[Num. Generacions]	[Q][Temps
[20]	[10]	[4216]	[0.44]
[60]	[10]	[1116]	[1.25]
[100]	[10]	[111]	[2.10]
[20]	[100]	[1170]	[4.38]
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[100]	[100]	[1109]	[21.19]
[20]	[1000]	[111]	[42.74]
[60]	[1000]	[119]	[133.21]
[100]	[1000]	[109]	[212.15]

Exercici 5

En aquest cas s'han obtingut millors resultats en utilitzar algoritmes genètics (AG), en comparació amb la recocció simulada, la implementació en AG és més costosa en realitzar-se més càlculs i requereix de més recursos per emmagatzemar les poblacions.