Localizare

Localizarea este procesul de adaptare a software-ului unei anumite regiuni sau limbi prin adaugarea unor componente specifice locale si traducere de text.

In plus fata de modificarea limbii, elementele culturale precum datele, numerele, valuta, etc trebuie sa fie adaptate.

Scopul este de a crea un design pentru localizare astfel incat sa nu avem nevoie de modificari de cod.

Localizarea specifica doua elemente:

* Limba: alpha-2 sau alpha-3 ISO 639 (intotdeauna litere mici)
* Tara: ISO 3166 alpha-2 sau codul numeric UN M.49 (intotdeauna majuscule)

Clasa ResourceBundle izoleaza datele local – specifice. Clasa returneaza perechi cheie/valoare, stocate in fisier clasa sau .properties.

Pasii utilizati pentru folosirea localizarii sunt:

* Crearea unui fisier bundle pentru fiecare locatie
* Apelarea unui locatii specifice pentru aplicatie

Design-ul pentru localizare incepe prin design-ul aplicatiei astfel incat toate textele, sunetele sau imaginile sa fie inlocuite la rulare cu elementele potrivite regiunii si culturii dorite.

Fiecare cheie din fisierul de proprietati identifica o componenta specifica a aplicatiei.

Conventia de nume pentru fisierul de proprietati este: MessageBundle\_xx\_YY.properties, unde xx este codul de limba, iar YY codul de tara.

Dupa ce a fost creat resource bundle-ul trebuie sa-l incarcam in aplicatie. Mai intai cream un obiect Locale care specifica limba si tara. Apoi cream resource bundle-ul prin specificarea numelui fisierului de baza al bundle-ului si localizarea curenta.

Crearea lui Locale se poate face in mai multe moduri:

* Clasa Locale include constante default pentru anumite tari
* Daca constanta nu este disponibila putem defini codurile de tara si de limba pentru a defini localizarea
* In cele din urma putem folosi metoda getDefault() pentru a obtine locatia default

In aplicatie in loc de text folosim resource bundle-ul, respectiv cheia din fisier corespunzatoare componetei curente.

Pentru a schimba localizarea vom incarca bundle-ul corespunzator localizarii folosind metoda getBundle().

Fie urmatorul exemplu care ilustreaza localizarea:

**public** **class** SampleApp {

PrintWriter pw = **new** PrintWriter(System.*out*, **true**);

BufferedReader br = **new** BufferedReader(**new** InputStreamReader(System.*in*));

Locale usLocale = Locale.*US*;

Locale frLocale = Locale.*FRANCE*;

Locale zhLocale = **new** Locale("zh", "CN");

Locale ruLocale = **new** Locale("ru", "RU");

Locale currentLocale = Locale.*getDefault*();

ResourceBundle messages = ResourceBundle.*getBundle*("MessagesBundle",

currentLocale);

NumberFormat currency;

Double money = **new** Double(1000000.00);

Date today = **new** Date();

DateFormat df;

**public** **static** **void** main(String[] args) {

SampleApp ui = **new** SampleApp();

ui.run();

}

**public** **void** run() {

String line = "";

**while** (!(line.equals("q"))) {

**this**.printMenu();

**try** {

line = **this**.br.readLine();

} **catch** (Exception e) {

e.printStackTrace();

}

**switch** (line) {

**case** "1":

setEnglish();

**break**;

**case** "2":

setFrench();

**break**;

**case** "3":

setChinese();

**break**;

**case** "4":

setRussian();

**break**;

**case** "5":

showDate();

**break**;

**case** "6":

showMoney();

**break**;

}

}

}

**public** **void** printMenu() {

pw.println("=== Localization App ===");

pw.println("1. " + messages.getString("menu1"));

pw.println("2. " + messages.getString("menu2"));

pw.println("3. " + messages.getString("menu3"));

pw.println("4. " + messages.getString("menu4"));

pw.println("5. " + messages.getString("menu5"));

pw.println("6. " + messages.getString("menu6"));

pw.println("q. " + messages.getString("menuq"));

System.*out*.print(messages.getString("menucommand") + " ");

}

**public** **void** setEnglish() {

currentLocale = usLocale;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** setFrench() {

currentLocale = frLocale;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** setChinese() {

currentLocale = zhLocale;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** setRussian() {

currentLocale = ruLocale;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** showDate() {

df = DateFormat.*getDateInstance*(DateFormat.*DEFAULT*, currentLocale);

pw.println(df.format(today) + " " + currentLocale.toString());

}

**public** **void** showMoney() {

currency = NumberFormat.*getCurrencyInstance*(currentLocale);

pw.println(currency.format(money) + " " + currentLocale.toString());

}

}

Cu urmatoarele fisiere de proprietati:

* MessagesBundle\_fr\_FR.properties

menu1 = Positionner sur Anglais

menu2 = Positionner sur Fran\u00e7ais

menu3 = Positionner sur Chinois

menu4 = Positionner sur Russe

menu5 = Montrer la date

menu6 = Montrer moi la monnaie!

menuq = Saisir q pour quitter

menucommand = Saisir une commande:

* MessagesBundle\_ru\_RU.properties

menu1 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u0430\u043d\u0433\u043b\u0438\u0439\u0441\u043a\u0438\u0439

menu2 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u0444\u0440\u0430\u043d\u0446\u0443\u0437\u0441\u043a\u0438\u0439

menu3 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u043a\u0438\u0442\u0430\u0439\u0441\u043a\u0438\u0439

menu4 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u0440\u0443\u0441\u0441\u043a\u0438\u0439

menu5 = \u041f\u043e\u043a\u0430\u0437\u0430\u0442\u044c \u0434\u0430\u0442\u0443

menu6 = \u041f\u043e\u043a\u0430\u0436\u0438\u0442\u0435 \u043c\u043d\u0435 \u0434\u0435\u043d\u044c\u0433\u0438!

menuq = \u0412\u0432\u0435\u0434\u0438\u0442\u0435 q \u0447\u0442\u043e\u0431\u044b \u0432\u044b\u0439\u0442\u0438

menucommand = \u0412\u0432\u0435\u0441\u0442\u0438 \u043a\u043e\u043c\u0430\u043d\u0434\u0443:

* MessagesBundle\_zh\_CN.properties

menu1=\u8bbe\u7f6e\u6210\u82f1\u6587

menu2=\u8bbe\u7f6e\u6210\u6cd5\u6587

menu3=\u8bbe\u7f6e\u6210\u4e2d\u6587

menu4=\u8bbe\u7f6e\u6210\u4fc4\u6587

menu5=\u663e\u793a\u65e5\u671f

menu6=\u663e\u793a\u91d1\u989d!

menuq=\u6309q\u952e\u9000\u51fa

menucommand=\u8f93\u5165\u547d\u4ee4:

* MessagesBundle.properties

menu1 = Set to English

menu2 = Set to French

menu3 = Set to Chinese

menu4 = Set to Russian

menu5 = Show the Date

menu6 = Show me the money!

menuq = Enter q to quit

menucommand = Enter a command:

**Formatul datei si al valutei**

Numerele pot fi localizate si afisate in format local. Clasele de formatere includ: DateFormat si NumberFormat. O aplicatie poate afisa date si valuta formatate.

Formatarea unei date cuprinde:

* Obtinerea obiectului DateFormat bazat pe un Locale
* Apelul metodei format() ce trimite data de formatat

Constantele din DateFormat sunt: SHORT, MEDIUM, LONG, FULL.

SimpleDateFormat este o subclasa a lui DateFormat ce permite un control mai bun asupra datelor de intrare.

Formatarea valutei urmareste:

* Obtinerea unei instante din NumberFormat
* Trimiterea unui Double metodei format()

**public** **class** DateApplication {

PrintWriter pw = **new** PrintWriter(System.*out*, **true**);

BufferedReader br = **new** BufferedReader(**new** InputStreamReader(System.*in*));

Locale ruLocale = **new** Locale("ru", "RU");

Locale currentLocale = Locale.*US*;

ResourceBundle messages = ResourceBundle.*getBundle*("MessagesBundle",

Locale.*US*);

Date today = **new** Date();

DateFormat df;

SimpleDateFormat sdf;

**public** **static** **void** main(String[] args) {

DateApplication dateApp = **new** DateApplication();

dateApp.run();

}

**public** **void** run() {

String line = "";

**while** (!(line.equals("q"))) {

**this**.printMenu();

**try** {

line = **this**.br.readLine();

} **catch** (Exception e) {

e.printStackTrace();

}

**switch** (line) {

**case** "1":

**this**.setEnglish();

**break**;

**case** "2":

**this**.setFrench();

**break**;

**case** "3":

**this**.setChinese();

**break**;

**case** "4":

**this**.setRussian();

**break**;

}

}

}

**public** **void** printMenu() {

pw.println("=== Date App ===");

df = DateFormat.*getDateInstance*(DateFormat.*DEFAULT*, currentLocale);

pw.println(messages.getString("date1") + " " + df.format(today));

df = DateFormat.*getDateInstance*(DateFormat.*LONG*, currentLocale);

pw.println(messages.getString("date2") + " " + df.format(today));

df = DateFormat.*getDateInstance*(DateFormat.*SHORT*, currentLocale);

pw.println(messages.getString("date3") + " " + df.format(today));

df = DateFormat.*getDateInstance*(DateFormat.*FULL*, currentLocale);

pw.println(messages.getString("date4") + " " + df.format(today));

df = DateFormat.*getTimeInstance*(DateFormat.*FULL*, currentLocale);

pw.println(messages.getString("date5") + " " + df.format(today));

sdf = **new** SimpleDateFormat("EEEE", currentLocale);

pw.println(messages.getString("date6") + " " + sdf.format(today));

sdf = **new** SimpleDateFormat("EEEE MMMM d, y G kk:mm:ss zzzz",

currentLocale);

pw.println(messages.getString("date7") + " " + sdf.format(today));

pw.println("\n--- Choose Language Option ---");

pw.println("1. " + messages.getString("menu1"));

pw.println("2. " + messages.getString("menu2"));

pw.println("3. " + messages.getString("menu3"));

pw.println("4. " + messages.getString("menu4"));

pw.println("q. " + messages.getString("menuq"));

System.*out*.print(messages.getString("menucommand") + " ");

}

**public** **void** setEnglish() {

currentLocale = Locale.*US*;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** setFrench() {

currentLocale = Locale.*FRANCE*;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** setChinese() {

currentLocale = Locale.*SIMPLIFIED\_CHINESE*;

messages = ResourceBundle.*getBundle*("MessagesBundle", currentLocale);

}

**public** **void** setRussian() {

currentLocale = ruLocale;

**this**.messages = ResourceBundle.*getBundle*("MessagesBundle",

currentLocale);

}

}

menu1 = Positionner sur Anglais

menu2 = Positionner sur Fran\u00e7ais

menu3 = Positionner sur Chinois

menu4 = Positionner sur Russe

menu5 = Montrer la date

menu6 = Montrer moi la monnaie!

menuq = Saisir q pour quitter

menucommand = Saisir une commande:

date1 = La date par d\u00e9faut est:

date2 = La date au format long est:

date3 = La date au format court est:

date4 = La date compl\u00e8te est:

date5 = L'heure compl\u00e8te est:

date6 = Le jour de la semaine est:

date7 = Mon r\u00e9glage de la date et de l'heure est:

menu1 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u0430\u043d\u0433\u043b\u0438\u0439\u0441\u043a\u0438\u0439

menu2 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u0444\u0440\u0430\u043d\u0446\u0443\u0437\u0441\u043a\u0438\u0439

menu3 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u043a\u0438\u0442\u0430\u0439\u0441\u043a\u0438\u0439

menu4 = \u0423\u0441\u0442\u0430\u043d\u043e\u0432\u0438\u0442\u044c \u0440\u0443\u0441\u0441\u043a\u0438\u0439

menu5 = \u041f\u043e\u043a\u0430\u0437\u0430\u0442\u044c \u0434\u0430\u0442\u0443

menu6 = \u041f\u043e\u043a\u0430\u0436\u0438\u0442\u0435 \u043c\u043d\u0435 \u0434\u0435\u043d\u044c\u0433\u0438!

menuq = \u0412\u0432\u0435\u0434\u0438\u0442\u0435 q \u0447\u0442\u043e\u0431\u044b \u0432\u044b\u0439\u0442\u0438

menucommand = \u0412\u0432\u0435\u0441\u0442\u0438 \u043a\u043e\u043c\u0430\u043d\u0434\u0443:

date1 = \u0414\u0430\u0442\u0430 \u043f\u043e-\u0443\u043c\u043e\u043b\u0447\u0430\u043d\u0438\u044e:

date2 = \u0414\u043b\u0438\u043d\u043d\u0430\u044f \u0434\u0430\u0442\u0430:

date3 = \u041a\u043e\u0440\u043e\u0442\u043a\u0430\u044f \u0434\u0430\u0442\u0430:

date4 = \u041f\u043e\u043b\u043d\u0430\u044f \u0434\u0430\u0442\u0430:

date5 = \u041f\u043e\u043b\u043d\u043e\u0435 \u0432\u0440\u0435\u043c\u044f:

date6 = \u0414\u0435\u043d\u044c \u043d\u0435\u0434\u0435\u043b\u0438:

date7 = \u041c\u043e\u0438 \u043b\u0438\u0447\u043d\u044b\u0435 \u0434\u0435\u043d\u044c \u0438 \u0432\u0440\u0435\u043c\u044f:

menu1=\u8bbe\u7f6e\u6210\u82f1\u6587

menu2=\u8bbe\u7f6e\u6210\u6cd5\u6587

menu3=\u8bbe\u7f6e\u6210\u4e2d\u6587

menu4=\u8bbe\u7f6e\u6210\u4fc4\u6587

menu5=\u663e\u793a\u65e5\u671f

menu6=\u663e\u793a\u91d1\u989d!

menuq=\u6309q\u952e\u9000\u51fa

menucommand=\u8f93\u5165\u547d\u4ee4:

date1=\u7f3a\u7701\u65e5\u671f:

date2=\u957f\u65e5\u671f:

date3=\u77ed\u65e5\u671f:

date4=\u5168\u79f0\u65e5\u671f:

date5=\u5168\u79f0\u65f6\u95f4:

date6=\u661f\u671f:

date7=\u5ba2\u6237\u65e5\u671f\u548c\u65f6\u95f4:

menu1 = Set to English

menu2 = Set to French

menu3 = Set to Chinese

menu4 = Set to Russian

menu5 = Show the Date

menu6 = Show me the money!

menuq = Enter q to quit

menucommand = Enter a command:

date1 = Default Date is:

date2 = Long Date is:

date3 = Short Date is:

date4 = Full Date is:

date5 = Full Time is:

date6 = Day of week is:

date7 = My custom day and time is: