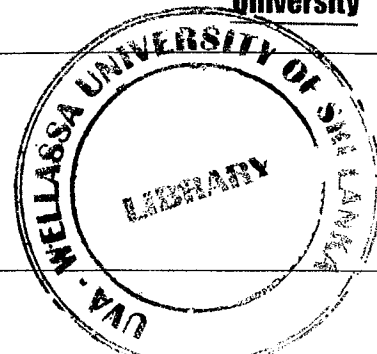


**Uva Wellassa University of Sri Lanka**  
**Faculty of Science and Technology**  
**Department of Computer Science and Technology**  
**400 Level 1<sup>st</sup> Semester Examination – Jul./Aug. 2016**  
**CST421-2 Software Localization**



**Instructions to candidates**

**Duration:** Two (02) hours

**Number of questions:** Four (04)

**Answer all the questions**

**Mark allocation:** 100

1.
  - a. Nowadays, most software is localized using software localization concepts and techniques in order to be available on larger markets.
    - i. Briefly describe what is meant by "software localization".

(3 mark)
    - ii. Give two (02) reasons to justify the importance of software localization.

(5 mark)
  - b. Software internationalization and software localization are two interrelated processes.
    - i. Define "software internationalization".

(3 mark)
    - ii. Briefly explain the relationship between software localization and software internationalization.

(4 mark)
  - c. Define the term "locale" in the context of software localization with suitable examples to illustrate its importance when reaching out to culturally and linguistically diverse markets.

(4 mark)
  - d. "Translation is the **only** activity in software localization". Discuss.

(6 mark)
  
2.
  - a. ASCII and Unicode are two character encodings. Basically, these are standards on how to represent different characters in binary.
    - i. Discuss how ASCII-based encoding systems were used to represent non-Latin characters in computer systems.

(4 mark)
    - ii. State two (02) limitations of the above (i) approach.

(2 mark)
    - iii. Briefly explain the difference between popularly used Sinhala/Tamil fonts and Unicode fonts.

(4 mark)
  - b. Find the UTF-8 binary representation of the Sinhala letter "අ" or Tamil letter "அ" assuming decimal code values for these two letters are 3,461 and 2,949 respectively.

(5 mark)

- c. UTF-8 and UTF-16 are commonly used encodings in the Unicode standard.
- Define "UTF-8" and "UTF-16". (4 mark)
  - "When both Latin (e.g. English) and non-Latin (e.g. Sinhala or Tamil) characters are present in a document relatively in equal amounts, UTF-16 is **more efficient** than UTF-8". Do you agree with this statement? Justify your answer. (6 mark)

- 3.
- State five (05) common places to be considered when localizing a software application. (5 mark)
  - Explain three (03) important design techniques which can be used to make a localized software application. (6 mark)
  - Briefly explain following testing types available in software localization process.
    - Pseudo testing
    - Linguistic testing
    - Cosmetic testing
 (9 mark)
  - "It is important to test a localized application in localized language rather than testing only in default language". Do you agree with this statement? Justify your answer. (5 mark)

- 4.
- Explain the basic steps that you need to follow to localize an open source software application like VLC player. (5 mark)
  - Discuss four (04) important strategies you need to follow to overcome the common issues arising when localizing the above application. (8 mark)
  - Write a console application using software localization principles to display three (03) messages in three (03) different locales (United States English: en\_US, Sri Lankan Sinhala: si\_LK and Sri Lankan Tamil: ta\_LK) as given in the following table. You may use Java or C# programming language you are familiar with and initial coding for both languages are done for you.

Message	Locale		
	en_US	si_LK	ta_LK
Greetings	Hello	ආයුබෝවන්	வணக்கம்
Inquiry	How are you?	ඔබට කොහොමද?	எப்படி சுகம்?
Farewell	Goodbye	නැවත හමුවෙමු	நன்றி மீண்டும் சந்திப்பம்

Hints:

- Source Package/Project name is "Program"
- Default locale file name is "localeBundle"
- Locale file property names for Greetings message, Inquiry message and Farewell message are "greetings", "inquiry" and "farewell" respectively
- Relevant packages/references are already added to the project

Java Program Code:

```
public class Program {
    public static void main(String[] args) {
        System.out.println("Enter your preferred language: (i.e. English or Sinhala or Tamil)");
        Scanner sc = new Scanner(System.in);
        String lang = sc.nextLine();
        System.out.println("Enter message type: (i.e. Greetings or Inquiry or Farewell)");
        String msg = sc.nextLine();
        // remaining part of the application will go here
    }
}
```

C# Program Code:

```
class Program {
    static void Main(string[] args) {
        Console.WriteLine("Enter your preferred language: (i.e. English or Sinhala or Tamil)");
        string lang = Console.ReadLine();
        Console.WriteLine("Enter message type: (i.e. Greetings or Inquiry or Farewell)");
        string msg = Console.ReadLine();
        // remaining part of the application will go here
    }
}
```

(12 mark)

