INFO 4178 : Software Engineering I (Genie Logiciel I) TP

Instructor: Dr Kimbi Xaveria

Instructions:

- Class should be divided into groups of **5 Members** per group.
- The methodology to use is **Scrum**, in our report we will need to clearly document on the steps of Scrum applied in realizing the project.
- The Project is based on coming up with a software solution (Web, Desktop, Mobile or Hybrid application) to resolve or ameliorate on some pertinent problems affecting our society.

Real world Problems

I. Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. It is preventable and curable. In 2021, there were an estimated 247 million cases of malaria worldwide. The estimated number of malaria deaths stood at 619 000 in 2021. The WHO African Region carries a disproportionately high share of the global malaria burden. In 2021, the region was home to 95% of malaria cases and 96% of malaria deaths. Children under 5 accounted for about 80% of all malaria deaths in the Region. (**Source: WHO**)

II. Smallholder farmers in Africa are still among the poorest in the world. It's hard for them to maximize their potential without modern agricultural technologies, sufficient investment and a distribution structure that remains ill-suited for accessing markets. Farmers also lack proper education into modern farming techniques (**Source**: **World Economic Forum**).

III. Unemployment in sub-Saharan Africa stands at around 6%, according to the International Labour Organization. But most of the work available is unskilled or low-skilled, in part because the region has the world's lowest levels of access to higher education, also there is low exposure to job opportunities. So, although many Africans

are employed, 70% of sub-Saharan Africa's workforce is vulnerable. The global average for vulnerable occupations is 46%. (**Source**: **World Economic Forum**).

IV. The COVID-19 pandemic has sent shockwaves around the world, overwhelming health systems, upending lives, disrupting globalized systems and supply chains, and undermining development gains in many of the poorest countries. While Sub-Saharan Africa appears to have avoided a catastrophic health scenario and life is taking on a sense of normalcy, the region continues to face scarring effects from the pandemic. Economic growth in the region is expected to decelerate from 4.1% in 2021 to 3.3% in 2022 compared to advanced economies that are expected to revert to the pre-pandemic growth trend in 2022. The region must therefore remain vigilant for future outbreaks to safeguard growth and economic prosperity, especially in the light of vaccine misinformation and vaccine hesitancy. (**Source: Worldbank.org)**

V. Africa faces a seemingly ever-increasing range of security challenges. The traditional threats of civil and border conflicts, crises of governance and military coups may have receded but they remain active. Meanwhile, other issues have risen to prominence, such as globalisation, security sector reform, terrorism, private security actors, peacekeeping and peace-building and the proliferation of weapons of mass destruction. (source:https://unu.edu/publications/books/african-security-governance-emerging-issues.html#overview). They security conditions is worsening, the situation in the Central African region remains something of a mixed picture, senior officials told the Security Council today, voicing particular concern over terrorist attacks, population displacement and the resurgence of old armed groups in the eastern Democratic Republic of the Congo. Martha Ama Akyaa Pobee, Assistant Secretary-General for Africa in the Departments of Political and Peacebuilding Affairs and Peace Operations, noted that while several countries of the region are on track to hold elections in 2022 and 2023, notable challenges threaten to derail those efforts. In Cameroon, the crisis emanating from Boko Haram splinter groups and displaced persons fleeing neighboring countries has only grown, (***source:***https://reliefweb.int/report/cameroon/security-challenges-threaten-derail-democratic-strides-central-african-region-briefers-tell-security-council)

Project Requirements

1. Carefully study the problems identified above and come up with a project topic that seeks to solve or ameliorate the identified problem.
2. Organize yourself into a highly performant and cross-functional scrum team of 5 members per group.
3. Carefully apply the steps of scrum studied in class in order to realize task (2) above and to successfully realize the project
4. Analytical Hierarchical process (AHP) must be applied in your Project
5. You must also make use of other concepts learned during the course such as Mathematical modelling and much more.
6. At the end of this you are expected to come up with two solutions artifacts
    a. A working software (Web, Mobile, Desktop or hybrid) implemented using any technology of your choice
    b. A project report detailing how your project was carried out and realized.
7. Grading will be done based on the evaluation of the functionalities of the software solution produced, the use of AHP in your solution, Mathematical modeling and the printed report

8. Each Group should push their solution (Application source code and Project Report to the following Repository)
    a. https://github.com/MATRIX30/INF4178_Software_Engineering_Masters_I-University-Of-Yaounde-I-_Project_Repository.git

    NB: Request for Collaboration status from the Teaching Assistant in order to get permission to push to the repository.

9. Weekly TD meetings with Teaching assistant (Tekoh Palma) to review progress of group work

Structure of Project report

Your project report should contain atleast the following information

1. Topic
2. Research Problem
3. General objective
    a. Specific objectives
4. System requirements
    a. Functional requirements
    b. Non-functional requirements
5. Application of Scrum
    a. Presentation of scrum team
    b. Description of how you applied scrum to your specific project
        i. Explanation of how Sprints were carried out
        ii. Team organization and roles
        iii. Daily scrum Agenda
        iv. Scrum conflict Resolution
        v. Scrum workflow management
        vi. Product Backlog
        vii. Sprint Backlog
        viii. Etc.
6. Methodology
    a. Architecture of your system
        i. Architectural Diagram
        ii. Description of Architecture
        iii. Architectural Drivers
    b. Model of your system
        i. Model UML
            1. Use case diagram
            2. Class diagram
            3. Activity diagram
            4. Sequence diagram
        ii. Mathematical Model
        iii. Algorithms
    c. Analytical Hierarchical process (AHP) algorithm applied to your project.

GoodLuck!