ICT IN ACCOUNTING

for Rwandan Schools

Senior **4** Teacher's Guide

FOREWORD

Dear Teachers,

Rwanda Basic Education Board is honoured to present the teacher's guide for ICT in Accounting in the Accounting Profession Option. This book serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of the ICT in Accounting Subject. The Rwandan educational philosophy is to ensure that students achieve full potential at every level of education which will prepare them to be well integrated in society and exploit employment opportunities.

Specifically, the curriculum for Accounting Profession Option was reviewed to train quality Accountant Technicians who are qualified, confident and efficient for job opportunities and further studies in Higher Education in different programs under Accounting career advancement.

In line with efforts to improve the quality of education, the government of Rwanda emphasizes the importance of aligning teaching and learning materials with the syllabus to facilitate their learning process. Many factors influence what students learn, how well they learn and the competences they acquire. Those factors include the relevance of the specific content, the quality of teachers' pedagogical approaches, the assessment strategies and the instructional materials.

High Quality Technician Accounting program is an important component of Finance and Economic development of the Rwanda Vision 2050, "The Rwanda We Want" that aims at transforming the country's socioeconomic status. The qualified Technicians accountant will significantly play a major role in the mentioned socioeconomic transformation journey. ICT in Accounting textbooks and teacher's guide were elaborated to provide the technical knowledge of different ICT tools used in Accounting profession in order to train a Technician Accountant capable of successfully performing his/her duties.

The ambition to develop a knowledge-based society and the growth of regional and global competition in the jobs market has necessitated the shift to a competence-based curriculum.

The ICT in Accounting teacher's guide provides active teaching and learning techniques that engage students to develop competences. In view of this, your role as an ICT in Accounting teacher is to:

- Plan your lessons and prepare appropriate teaching materials.
- Organize group discussions for students considering the importance of

social constructivism suggesting that learning occurs more effectively when the students works collaboratively with more knowledgeable and experienced people.

- Engage students through active learning methods such as inquiry methods, group discussions, research, investigative activities and group or individual work activities.
- Provide supervised opportunities for students to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and cooperation.
- Support and facilitate the learning process by valuing students' contributions in the class activities.
- Guide students towards the harmonization of their findings.
- Encourage individual, pair and group evaluation of the work done in the classroom and use appropriate competence-based assessment approaches and methods.

To facilitate you in your teaching activities, the content of this book is self-explanatory so that you can easily use it. It is divided in 3 parts:

The part I explains the structure of this book and gives you the methodological guidance;

The part II gives a sample lesson plan;

The part III details the teaching guidance for each concept given in the student book.

Even though this Teacher's guide contains the guidance on solutions for all activities given in the student's book, you are requested to work through each question before judging student's findings.

I wish to sincerely express my appreciation to the people who contributed towards the development of this book, particularly, REB staff, UR Lecturers, Teachers from TTC and General Education and experts from different Education partners for their technical support. A word of gratitude goes also to the administration of Universities, Head Teachers and TTCs principals who availed their staff for various activities.

Dr. MBARUSHIMANA Nelson

Director General, REB.

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PART I. GENERAL INTRODUCTION

I.0. About the teacher's guide

This book is a teacher's guide for ICT in Accounting subject for Senior Four in Accounting program. It is designed to complement and accompany the student book and intends to help teachers in the implementation of the competence based curriculum specifically ICT in Accounting syllabus.

As the name says, it is a guide that teachers can refer to when preparing their lessons. Teachers may prefer to adopt the guidance provided but they are also expected to be more creative and consider their specific classes' contexts and prepare accordingly.

I.1. The structure of the guide

This section presents the overall structure, the unit and sub-heading structure to help teachers to understand the different sections of this guide and what they will find in each section.

Overall structure

The whole guide has three main parts as follows:

❖ **Part I: General Introduction.**

This part provides general guidance on how to develop the generic competences, how to integrate cross cutting issues, how to cater for students with special educational needs, active methods and techniques of ICT and guidance on assessment.

❖ **Part II: Sample lesson plan**

This part provides a sample lesson plan, developed and designed to help the teacher develop their own lesson plans.

❖ **Part III: Unit development**

This is the core part of the guide. Each unit is developed following the structure below. The guide ends with references.

Each unit is made of the following sections:

– **Unit title:** from the syllabus

– **Key unit competence**: from the syllabus

– **Prerequisites (knowledge, skills, attitudes and values)**

This section indicates knowledge, skills and attitudes required for the success of the unit. The competence-based approach calls for connections between units/topics within a subject and interconnections between different subjects. The teacher will find an indication of those prerequisites and guidance on how to establish connections.

– **Cross-cutting issues to be addressed**

This section suggests cross cutting issues that can be addressed depending on the unit content. It provides guidance on how to come up with the integration of the issue. Note that the issue indicated is a suggestion; teachers are free to take another cross-cutting issue taking into consideration the learning environment.

– **Guidance on the introductory activity**

Each unit starts with an introductory activity in the teacher's book. This section of the teacher's guide provides guidance on how to conduct this activity and related answers. Note that students may not be able to find the right solution but they are invited to predict possible solutions or answers. Solutions are provided by students gradually through discovery activities organized at the beginning of lessons or during the lesson.

– **List of lessons/sub-heading**

This section presents in a table suggestions on the list of lessons, lesson objectives copied or adapted from the syllabus and duration for each lesson. Each lesson /subheading is then developed.

– **End of each unit**

At the end of each unit the teacher provides the following sections:

- Summary of the unit which provides the key points of content developed in the teacher's book.
- Additional information which provides additional content compared to the student book for the teacher to have a deeper understanding of the topic.
- End unit assessment which provides answers to questions of the end unit assessment in the teacher's book and suggests additional questions and related answers to assess the key unit competence.
- Additional activities: (remedial, consolidation and extended activities). The purpose of these activities is to accommodate each student (slow, average and gifted) based on the end of unit assessment results.

Structure of each sub heading

Each lesson/sub-heading is made of the following sections:

Lesson /Sub heading title 1:

   – **Prerequisites/Revision/Introduction:**

This section gives a clear instruction to teacher on how to start the lesson.

   – **Teaching resources**

This section suggests the teaching aids or other resources needed in line with the activities to achieve the learning objectives. Teachers are encouraged to replace the suggested teaching aids by the available ones in their respective schools and based on the learning environment.

   – **Learning activities**

This section provides a short description of the methodology and any important aspect to consider. It provides also answers to learning activities with cross reference to student's book.

   – **Exercises/application activities**

This provides questions and answers for exercises/ application activities.

I.2. Methodological guidance

I.2.1. Developing competences

Since 2015 Rwanda shifted from a knowledge based to a competence based curriculum for pre-primary, primary and general secondary education. For Accounting, it is in 2021 that the competence based curriculum was embraced. This called for changing the way of learning by shifting from teacher centered to a learner centered approach. Teachers are not only responsible for knowledge transfer but also for fostering teacher's learning achievement, and creating safe and supportive learning environment. It implies also that a student has to demonstrate what he/she is able to do using the knowledge, skills, values and attitude acquired in a new or different or given situation.

The competence-based curriculum employs an approach of teaching and learning based on discrete skills rather than dwelling on only knowledge or the cognitive domain of learning. It focuses on what learner can do rather than what learners know. Students develop basic competences through specific subject unit competences with specific learning objectives broken down into knowledge, skills and attitudes. These competences are developed through learning activities disseminated in learner-centered rather than the traditional

didactic approach. The students are evaluated against set standards to achieve before moving on.

In addition to specific subject competences, students also develop generic competences which are transferable throughout a range of learning areas and situations in life. Below are examples of how generic competences can be developed in ICT in Accounting:

Generic competence	Examples of activities that develop generic competences
Critical thinking	- Describe the relationship and interdependence of sciences - Observe, record, interpret data recorded during experiments - Identify and use the applications of ICT in Accounting concepts to solve problems of life and society
Research and Problem solving	- Research using internet or books from the library - Design a project for making bioplastics - Design a questionnaire for data collection during field visit
Innovation and creativity	- Create an experiment procedure to prove a point - Develop a graph to illustrate information - Design a data collection survey/questionnaire - Conduct experiments with objectives, methodology, observations, results, conclusions - Identify local problems and ways to resolve them
Cooperation, Personal and Interpersonal management and life skills	- Work in Pairs - Small group work - Large group work
Communication	- Organise and present in writing and verbally a complete and clear report of an experiment - Observe, record, interpret the results of a measurement accurately. - Select and use appropriate formats and presentations, such as tables, graphs and diagrams.

Lifelong learning	- Exploit all opportunities available to improve on knowledge and skills. Reading scientific journals to keep updated.

I.2.2. Addressing cross cutting issues

Among the changes in the competence based curriculum is the integration of cross cutting issues as an integral part of the teaching learning process-as they relate to and must be considered within all subjects to be appropriately addressed. The eight cross cutting issues identified in the national curriculum framework are: genocide studies, environment and sustainability, gender, Comprehensive Sexuality Education (CSE), Peace and Values Education, Financial Education, standardization Culture and Inclusive Education.

Some cross cutting issues may seem specific to particular learning areas or subjects but the teacher needs to address all of them whenever an opportunity arises. In addition, student should always be given an opportunity during the learning process to address these cross cutting issues both within and out of the classroom so as to progressively develop related attitudes and values.

Below are examples on how crosscutting issues can be addressed in ICT in Accounting:

Cross-cutting issues	Examples on how to integrate the cross-cutting issues
Inclusive education	Involve all students in all activities without any bias. Eg: Allow a student with physical disability (using wheelchair) to take notes or lead the team during an experiment.
Gender	Involve both girls and boys in all activities: No activity is reserved only to girls or boys. Teacher should ensure equal participation of both girls and boys during experiments as well as during cleaning and tidying up related activities after experiments.
Peace and Values Education	During group activities, debates and presentations, the teacher will encourage students to help each other and to respect opinions of colleagues.

Standardization culture	– Most ICT in Accounting require the use of software. Students should always be aware to use standard software products and use standard software
	– In addition, when using the different software students have to record data accurately.
	– For tasks involving calculations, they have to always present accurate results.
Environment and sustainability	– In order to avoid the environment pollution, students avoid throwing ICT materials away anywhere; special places or appropriate containers should be used.
	– Students also have to be aware of the impacts of the use of some products like cartridges, plastic components of ICT tools on the environment.
Financial Education	When performing experiments, students are encouraged to avoid wasting chemicals by using the quantities that are just required. They are required to also avoid spoiling equipments and other materials…

I.2.3. Attention to special educational needs specific to each subject

In the classroom, students learn in different ways depending to their learning pace, needs or any other special problem they might have. However, the teacher has the responsibility to know how to adopt his/her methodologies and approaches in order to meet the learning needs of each student in the classroom. Also the teacher must understand that students with special needs need to be taught differently or need some accommodations to enhance the learning environment. This will be done depending on the subject and the nature of the lesson.

In order to create a well-rounded learning atmosphere, the teacher needs to:

▪ Remember that students learn in different ways so they have to offer a variety of activities (e.g. role-play, music and singing, word games and quizzes, and outdoor activities).

▪ Maintain an organized classroom and limits distraction. This will help students with special needs to stay on track during lesson and follow instruction easily.

▪ Vary the pace of teaching to meet the needs of each student. Some students process information and learn more slowly than others.

- Break down instructions into smaller, manageable tasks. Students with special needs often have difficulty understanding long-winded or several instructions at once. It is better to use simple, concrete sentences in order to facilitate them understand what you are asking.
- Use clear consistent language to explain the meaning (and demonstrate or show pictures) if you introduce new words or concepts.
- Make full use of facial expressions, gestures and body language.
- Pair a student who has a disability with a friend. Let them do things together and learn from each other. Make sure the friend is not over protective and does not do everything for the student. Both students will benefit from this strategy.
- Use multi-sensory strategies. As all students learn in different ways, it is important to make every lesson as multi-sensory as possible. Students with learning disabilities might have difficulty in one area, while they might excel in another. For example, use both visual and auditory cues.

Below are general strategies related to each main category of disabilities and how to deal with every situation that may arise in the classroom. However, the list is not exhaustive because each student is unique with different needs and that should be handled differently.

Strategy to help students with developmental impairment:
- Use simple words and sentences when giving instructions.
- Use real objects that the student can feel and handle, rather than just working abstractly with pen and paper.
- Break a task down into small steps or learning objectives. The student should start with an activity that she/he can do already before moving on to something that is more difficult.
- Gradually give the student less help.
- Let the student work in the same group with those without disability.

Strategy to help students with visual impairment:
- Help students to use their other senses (hearing, touch, smell and taste) to play and carry out activities that will promote their learning and development.
- Use simple, clear and consistent language.
- Use tactile objects to help explain a concept.
- If the students has some sight, ask them what they can see. Get information from parents/caregivers on how the student manages their remaining sight at home.
- Make sure the student has a group of friends who are helpful and who allow the students to be as independent as possible.

- Plan activities so that students work in pairs or groups whenever possible.

Strategy to help students with hearing impairment:
- Strategies to help students with hearing disabilities or communication difficulties
- Always get the students attention before you begin to speak.
- Encourage the student to look at your face.
- Use gestures, body language and facial expressions.
- Use pictures and objects as much as possible.
- Ask the parents/caregivers to show you the signs they use at home for communication use the same signs yourself and encourage other students to also use them.
- Keep background noise to a minimum.

Strategies to help children with physical disabilities or mobility difficulties:
- Adapt activities so that student who use wheelchairs or other mobility aids, or other students who have difficulty moving, can participate.
- Ask parents/caregivers to assist with adapting furniture e.g. The height of a table may need to be changed to make it easier for a student to reach it or fit their legs or wheelchair under.
- Encourage peer support friends can help friends.
- Get advice from parents or a health professional about assistive devices.

I.2.4. Guidance on assessment

Each unit in the teacher's guide provides additional activities to help students achieve the key unit competence. Results from assessment inform the teacher which student needs remedial, consolidation or extension activities. These activities are designed to cater for the needs of all categories of learners; slow, average and gifted learners respectively.

Assessment is an integral part of teaching and learning process. The main purpose of assessment is for improvement. Assessment for learning/ **Continuous/ formative assessment** intends to improve students' learning and teacher's teaching whereas assessment of learning/summative assessment intends to improve the entire school's performance and education system in general.

Continuous/ formative assessment

It is an ongoing process that arises out of interaction during teaching and learning process. It includes lesson evaluation and end of sub unit assessment. This formative assessment plays a big role in teaching and learning process. The teacher should encourage individual, peer and group evaluation of the work done in the classroom and uses appropriate competence-based assessment approaches and methods.

In Senior Four textbook, formative assessment principle is applied through application activities that are planned in each lesson to ensure that lesson objectives are achieved before moving on. At the end of each unit, the end unit assessment is formative when it is done to give information on the progress of students and from there decide what adjustments need to be done. Assessment standards are taken into consideration when setting tasks.

Summative assessment

The assessment done at the end of the term, end of year, is considered as summative. The teacher, school and parents are informed on the achievement of educational objectives and think of improvement strategies. There is also end of level/ cycle assessment in form of national examinations.

I.2.5. Students' learning styles and strategies to conduct teaching and learning process

There are different teaching styles and techniques that should be catered for. The selection of teaching method should be done with the greatest care and some of the factors to be considered are: the uniqueness of subjects, the type of lessons, the particular learning objectives to be achieved, the allocated time to achieve the objective, instructional materials available, the physical/sitting arrangement of the classroom, individual students' needs, abilities and learning styles.

There are mainly four different learning styles as explained below:

a) Active and reflective learners

Active learners tend to retain and understand information best by doing something active with it, discussing or applying it or explaining it to others. Reflective learners prefer to think about it quietly first.

b) Sensing and intuitive learners

Sensing learners tend to like learning facts while intuitive learners often prefer discovering possibilities and relationships. Sensors often like solving problems by well-established methods and dislike complications and surprises; intuitive learners like innovation and dislike repetition.

c) Visual and verbal learners

Visual learners remember best what they see (pictures, diagrams, flow charts, time lines, films, demonstrations, etc); verbal learners get more out of words (written and spoken explanations).

d) Sequential and global learners

Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. Global learners tend to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly "getting it."

I.2.6. Teaching methods and techniques that promote the active learning

The different student learning styles mentioned above can be catered for, if the teacher uses active learning whereby students are really engaged in the learning process.

What is Active learning?

Active learning is a pedagogical approach that engages students in doing things and thinking about the things they are doing. In active learning, learners are encouraged to bring their own experience and knowledge into the learning process.

The role of the teacher in active learning

– The teacher engages students through active learning methods such as inquiry methods, group discussions, research, investigative activities and group and individual work activities.

– He/she encourages individual, peer and group evaluation of the work done in the classroom and uses appropriate competence-based assessment approaches and methods.

– He provides supervised opportunities for students to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and cooperation.

– Teacher supports and facilitates the learning process by valuing students' contributions in the class activities.

The role of learners in active learning

Learners are key in the active learning process. They are not empty vessels to fill but people with ideas, capacity and skills to build on for effective learning.

A learner engaged in active learning:

– Communicates and shares relevant information with other learners through presentations, discussions, group work and other learner-centred activities (role play, case studies, project work, research and investigation)

– Actively participates and takes responsibility for their own learning

– Develops knowledge and skills in active ways

– Carries out research/investigation by consulting print/online documents and resourceful people, and presents their findings

– Ensures the effective contribution of each group member in assigned tasks through clear explanation and arguments, critical thinking, responsibility and confidence in public speaking

– Draws conclusions based on the findings from the learning activities.

Some active techniques that can be used in ICT in Accounting

The teaching methods strongly emphasised in the Competence Based Curriculum (CBC) are active methods. Below are some active techniques that apply in sciences:

A. Practical work/ experiments:

Many of the activities suggested in ICT in Accounting curriculum as well as in the teacher's book are practical works or experiments.

Practical work is vital in learning ICT in Accounting; this method gives the student the opportunity to implement a series of activities and leads to the development of both cognitive and hands-on skills. The experiments and questions given should target the development of the following skills in students: Observation, Recording and Report writing, Manipulation, Measuring, Planning and designing.

A practical lesson/Experiment is done in three main stages:

▪ **Preparation of experiment:** Checking materials to ensure they are available and at good state; try the experiment before the lesson; think of safety rules and give instructions to lab technician if you have any.

▪ **Performance of experiment:** Sitting or standing arrangement of students; introduction of the experiment: aims and objectives; setting up the apparatus; performing the experiment; write and record the data.

▪ **Discussion:** Observations and interpreting data; make generalisations

and assignment: writing out the experiment report and further practice and research.

In some cases, demonstration by the teacher is recommended when for example the experiment requires the use of sophisticated materials or very expensive materials or when safety is a major factor like dangerous experiments and it needs specific skills to be learnt first.

In case your school does not have enough laboratory materials and chemicals, experiments can be done in groups but make sure every student participates. You can also make arrangements with the neighbouring science school and take your students there for a number of experiments.

B. Research work

Each student or group of students is given a research topic. They have to gather information from internet, available books in the library or ask experienced people and then the results are presented in verbal or written form and discussed in class.

C. Project work

ICT in Accounting teachers are encouraged to sample and prepare project works and engage their students in as many as possible. Students in groups or individually are engaged in a self-directed work for an extended period of time to investigate and respond to a complex question, problem, or challenge. The work can be presented to classmates or other people beyond the school. Projects are based on real-world problems that capture the students' interest. This technique develops higher order thinking as the students acquire and apply new knowledge in a problem-solving context.

D. Field trip

One of the main aims of teaching ICT in Accounting in Rwanda is to apply its knowledge for development. To achieve this aim we need to show to students the relationship between classroom science lessons and applied sciences. This helps them see the link between science principles and technological applications.

To be successful, the field visit should be well prepared and well exploited after the visit:

Before the visit, the teacher and student:

- Agree on aims and objectives

- Gather relevant information prior to visit

- Brainstorm on key questions and share responsibilities

- Discuss materials needed and other logistical and administrative issues

- Discuss and agree on accepted behaviors during the visit

- Visit the area before the trip if possible to familiarize yourself with the place

After the visit

When students come back from trip, the teacher should plan for follow-up. The follow-up should allow students to share experiences and relate them to the prior science knowledge. This can be done in several ways; either: Students write a report individually or in groups and give to the teacher for marking. The teacher then arranges for discussion to explain possible misconceptions and fill gaps. Or students write reports in groups and display them on the class notice board for everyone to read.

Main steps for a lesson in active learning approach

All the principles and characteristics of the active learning process highlighted above are reflected in steps of a lesson as displayed below. Generally, the lesson is divided into three main parts whereby each one is divided into smaller steps to make sure that students are involved in the learning process. Below are those main parts and their small steps:

1) I**ntroduction**

Introduction is a part where the teacher makes connection between the current and previous lesson through appropriate technique. The teacher opens short discussions to encourage students to think about the previous learning experience and connect it with the current instructional objective. The teacher reviews the prior knowledge, skills and attitudes which have a link with the new concepts to create good foundation and logical sequencings.

2) **Development of the new lesson**

The development of a lesson that introduces a new concept will go through the following small steps: discovery activities, presentation of students' findings, exploitation, synthesis/summary and exercises/application activities, explained below:

❖ **Discovery activity**

Step 1

- The teacher discusses convincingly with students to take responsibility of their learning
- He/she distributes the task/activity and gives instructions related to the tasks (working in groups, pairs, or individual to instigate collaborative learning, to discover knowledge to be learned)

Step 2

- The teacher let the students work collaboratively on the task.
- During this period the teacher refrains to intervene directly on the knowledge
- He/she then monitors how the students are progressing towards the knowledge to be learned and boost those who are still behind (but without communicating to them the knowledge).

❖ **Presentation of students' productions**

- In this episode, the teacher invites representatives of groups to present the students' productions/findings.
- After three/four or an acceptable number of presentations, the teacher decides to engage the class into exploitation of the students' productions.

❖ **Exploitation of student's productions**

- The teacher asks the students to evaluate the productions: which ones are correct, incomplete or false
- Then the teacher judges the logic of the students' products, corrects those which are false, completes those which are incomplete, and confirms those which are correct.

❖ **Institutionalization (summary/conclusion/ and examples)**

- The teacher summarizes the learned knowledge and gives examples which illustrate the learned content.

❖ **Exercises/Application activities**

- Exercises of applying processes and products/objects related to learned unit/sub-unit
- Exercises in real life contexts
- Teacher guides students to make the connection of what they learnt to real life situations. At this level, the role of the teacher is to monitor the fixation of process and product/object being learned.

3) **Assessment**

In this step the teacher asks some questions to assess achievement of

instructional objective. During assessment activity, students work individually on the task/activity. The teacher avoids intervening directly. In fact, results from this assessment inform the teacher on next steps for the whole class and individuals. In some cases, the teacher can end with a homework assignment.

PART II: SAMPLE LESSON PLANS

School Name: **Teacher's name**:

Term	Date	Subject	Class	Unit N°	Lesson N°	Dura-tion	Class size
I	…/../ 20...	ICT in Accounting	S4	2	1 of 6	40	40 students

Type of Special Educational Needs to be catered for in this lesson and number of learners in each category	
Unit title	WORD PROCESSING
Key Unit Competence:	Write different documents format by using tools found in Ms Word
Title of the lesson	Text formatting
Instructional Objective	Using computers with Word Processing, students should be able to format text successfully using font tools to make beautiful looking text.
Plan for this Class (location: in / outside)	In the computer laboratory
Learning Materials (for all learners)	All learners will have computers, learners with visual disability will activate the Narrator
References	S4 Student Book

Timing for each step	Description of teaching and learning activity		Generic competences and cross cutting issues to be addressed + a short explanation
	Using Word processing program, students are given texts to format by applying different methods. Demonstration by the teacher or students is done and other students follow suit.		
	Teacher activities	Learner activities	

1. **Introduction** 5 min	Using a projector, the teacher displays a beautifully formatted text. Ask questions on the appearance of the text and how it can be made With questions, make learners identify the different formats in the text they see	Students observe the displayed text Students answers different questions on the appearance of the text Students identify the different formats in the document shown to them and propose the lesson title	**Communication:** as students answer the questions
2. **Development of the lesson : …min**	Show the text previously presented now without the different formats and make students write it. Let students identify the words which are differently formatted. They use the two files: the one presented by the teacher with formatted text and the plain text they write	Students write the plain text with no formatting Students identify the words that are differently formatted. Those are words which: have a have a different font size, have a different font color, have different font style, have a different case (capital), are bold, italic or underlined.	**Research and problem solving:** As students search for means to format text

a) Discovery activity	Now guide students through the different text formatting options. For each option first identify the differently looking word, let learners change the same word in their files so that it looks like the one in your file. After a short while (not more than 1 minute) ask those who did it and they say how they proceeded. Refine their answer so as to give the procedure to use by all students. When the common procedure is given let learners		Critical thinking: This is achieved as students try to choose among the different tools the one which can help format text as indicated.

use it to format text and help those with disabilities.		
Guide students to discover how to increase or decrease text size and help them do it	Students increase or decrease words size in the plain text to make it look like the one in the file shown	
Make students now change the color of the text and guide them where they find it difficult	Students change the text font color by themselves or by following the guidance of the teacher	
Make students change the font style. Guide them so that they choose a font like the one in the demonstrated file	Students change the font style. They try to make the special word look like the one in the teacher's file	
Now guide learners so that they change the letter in their plain files to capital	Students change the text case	
Guide learners so that they can make the text bold, underlined or italic	Students make the text bold, underlined or italic	

b) **Presentation and exploitation of learner's productions**	Using a projector let learners show their files. Guide students so that they appreciate the work done by their colleague	Students connect their computers to the projector to show the work they have done Students appreciate the work done by their colleagues by showing which words look exactly like in the teacher's file and which one does not.	**Communication:** This is developed as students show and explain what they have done and other students appreciate their work **Peace and Values Education**: As students express their ideas about others' work, they learn to say it constructively, respect others' opinions
c) Summary/ conclusion	With the students, make a summary of how to change font size, change font colour, change font style, change case, make text bold, italic or underlined.	Students give the procedure to change the text to different fonts namely colour, style, changing case, make text bold, italic or underlined.	
3. Assessment 5 min	Give a sentence which the students will change its font. The sentence should contain ten words to format so that marking is made easy.	Student do the assessment which is marked out of 5 or 10.	
Teacher self-evaluation	If all students can perform text formatting then the lesson was understood.		

UNIT 1 ▶ COMPUTER SECURITY

1.1 Key unit competence

Identify various computer security threats and prevents them

1.2. Prerequisite knowledge and skills:

Students are already familiar with windows explorer, compute software and hardware, they will then find it easy to apply computer security and take measures for protecting computers against any kind of virus.

Students have also dim understanding of what a database is as they use a computer external storages such as flash disk, external hard disk, SD memory cards, and visit different online application which are the main root/sources of different types of viruses.

1.3. Cross-cutting issues to be addressed:

Throughout every lesson, cross cutting issues have to be addressed. Addressing cross cutting issues makes a lesson not a standalone entity but something that is related to real issues in society. Here are how cross cutting issues are addressed:

- **Standardization culture:** While learning Computer security, students become aware antiviruses program installation requires a certain level of standardization for a proper selection of an antivirus to be used.
- **Financial Education:** Is covered when students discuss the cost implication invested in buying antivirus security keys and the financial benefits of installing an antivirus.
- **Gender education:** students must be aware that ICT is not a subject appropriate only for girls or boys. ICT topics especially those related to computer security are appropriate for both sexes not for only boys.

1.4. Guidance on the introductory activity

- The teacher organizes students in pairs in order to do the unit's introductory activity.
- The teacher asks students to do the introductory activity in their respective groups.
- The teacher moves around to see how students are working and provides guidance where it is needed.
- The teacher invites some groups to presents their findings to the class
- The teacher asks students to evaluate the findings.
- The teacher tells students that in the coming lessons they will have complete answers.

Answer of introductory activity

i) Jane's computer has been attacked by viruses, because a virus disturbs the normal performance of the computer by damaging operating system files and other data stored in the computer.

Answers for point ii, iii, and iv are found in the content of the student book

1.5 List of lessons

No	Lesson title	Learning objectives	Number of periods
1	Introduction to computer security	Explain computer security related terms	2
2	Importance of computer security	Identify importance of computer security	2
3	Computer threats	Identify and explain different categories of threats and their effects on computers	3
4	Computer virus	Identify different types of computer viruses and how to take measures against them	2
5	Computer attacks	Explain different types of computer attacks	2

6	Threats protection-	Protect a computer against threats by Installing an antivirus and antimalware	2
7	Threat prevention	List and describe different methods of threat prevention	2
8	End unit assessment		1
Total number of periods			16

LESSON 1: Introduction to computer Security

a) Learning objectives

Explain computer security related terms

b) Teaching resources:

For this lesson to be effective students and students will need to have student books and computers with internet connectivity for doing research in order to understand different database concepts.

c) Prerequisites

Students already covered some content on computer security, are therefore familiar of how a computer can be infected by viruses and how to prevent them.

d) Learning activity:

Guidance:

- The lesson starts by analyzing questions in the activity 1.1. If answers can't be found, students are told that by the end of the lesson they will be able to answer them

- By the guidance of the Teacher students identify different terms related with computer security and brainstorm on it.

- Under the guidance of the teacher, students explain different terms related with computer security and importance of computer security.

- The teacher gives guidance on how to do the questions in the application activity 1.1

- Students do the questions in the activity 1.1 that were not answered at the beginning

Answers of activity 1.1

Students may answer question 1and 2 basing on the knowledge they have got from this lesson or simply by reading the content of the student's book in the corresponding section or through doing further research.

When a computer user leaves the computer without closing it, an unauthorized user can access confidential data, manipulate and use it without permission, this can lead to the computer user, company he/she work from, to lose integrity and honesty by the customer.

e) Application activity 1.1

Answers:

Students may answer question 1 and 2 and 3 basing on the knowledge they have got from this lesson or simply by reading the content of the student's book in the corresponding section or through doing further research.

LESSON 2: Importance of computer security

a) Learning objectives

Identify the importance of computer security

b) Teaching resources

For the effectiveness of the lesson, it is necessary to have student's book and computers with internet connectivity to facilitate research which is very necessary for understanding the importance of computer security

c) Prerequisites

Students have some understanding on computer security got from the first lesson of this unit and can apply it in learning easily this lesson.

d) Learning activity:

Guidance:

The lesson starts by organizing students in groups of 4, asking them to brainstorm the importance and purpose of computer security.

Under the guidance of the teacher, students identify different fields where computer security is needed and kind of data to protect. Students may also identify the people who have the responsibility to protect computers

Answers of activity 1.2

Answers for this activity 1 and 2 can be found in the student book. Students do research to find further explanations.

e) Application Activity 1.2

Answers:

Answers for the application activity 1 and 2, for this section 1.2 are found in the student book. For answers that cannot be immediately found the teacher helps students refine the answers or do further documentation or search for them on the internet.

LESSON 3: Computer threats

a) Learning objectives

Identify and explain different categories of threats and their effects on computers

b) Teaching resources:

Resources needed for this lesson are: student's book and computers with internet connectivity for

doing additional research.

c) Prerequisites

Students have some understanding on computer security got from the first and second lesson of this unit and can apply it in learning easily this lesson.

d) Activity:

Guidance:
- Start the lesson by grouping student in pairs
- In pairs students discuss the scenario in activity 1.3, present their findings and the whole class discuss on the findings.
- With the guidance of the teacher the class discuss the different cause of

slowing down the computer and loss of some data from the hard disk.
- As students have now got answers, they evaluate their findings that they presented at the beginning of the lesson
- The teacher gives guidance on how to do the application activity 1.3

Answers of activity 1.3

1. Students discuss the different reasons causing the computer to slowdown and loss of data on the hard disk and then propose solutions for that issue indicated in the scenario. More details for to answer this activity are available in student book.

e) Application Activity 1.3

Answers:

The questions 1 and 4 of application activity 1.3 can be answered by reading the content available in the student book.

For the questions 2 and 3, teacher takes in the school computer lab, guides students to remove all available RAMs in the computer and then observe what happens to the system after that, in pairs Students conduct a diagnostic of the school computer lab and enumerate the different threats found in the computers.

LESSON 4: Computer virus

a) Learning objectives

Explain the effect of virus in the computer

Identify different types of computer viruses and how to take measures against them

b) Teaching resources

Resources needed for this lesson are: student's book and computers with internet connectivity for

doing additional research.

c) Prerequisites

Students already learnt computer threats in the lesson 1.3, they will find it easy to apply the same skill in this new lesson.

d) Activity:

Guidance:

The teacher starts the lesson by taking students in the computer laboratory with internet connectivity, guiding them to compare virus and antivirus, discussing different types of viruses, their characteristics and conducting diagnostic for checking whether it has virus or not.

As students have now got answers, they evaluate their findings that they presented at the beginning of the lesson

The teacher gives guidance on how to do the application activity 1.4

> ### *Answers of activity 1.4*
>
> Answers for the activity 1, 2, 3 and 4 for this section 1.2 are found in the student book. For answers that cannot be immediately found the teacher helps students refine the answers or do further documentation or search for them on the internet.

Application of activity 1.4

> Answers for this application activity 1 for this section 1.4 are found in the student book.

LESSON 5: Computer attacks

a) Learning objectives

Explain different types of computer attacks

b) Teaching resources:

Teacher and students will need computers, projector for demonstrating examples

to the class, student's book and internet connectivity for doing more research.

c) Prerequisites

Students have learnt computer threats and computer viruses' protection; they will find it easy to apply the same skill in this new lesson.

d) Learning activity:

Guidance:
- This lesson is started by grouping student in group of 4, then asking them to observe the figure showing a virus and a malware alert.
- Under the guidance of the teacher, discuss about those attacks and how they can be prevented.
- Students do the questions in the activity 1.5 that were not answered at the beginning

Answers of activity 1.5

a .The first computer has been attacked by malware, while the second one has been attacked by a virus.

b.To prevent malware, antimalware should be installed while an antivirus for preventing a virus. Most important we should avoid opening unknown emails, and popups messages.

e) Application Activity 1.5

Answers:

Answers for the application activity 1, 2 and 3 are found in the student book. For answers that cannot be immediately found the teacher helps students refine the answers or do further documentation or search for them on the internet

Teacher takes students in computer laboratory and guide each student to detect whether there are some computers which have been attached or not.

LESSON 6: Threats protection

a) Learning objectives

Protect a computer against threats by installing an antivirus

b) Teaching resources:

Students will need computers in the computer lab, projector for demonstrating examples to the class, student's book and internet connectivity for doing more research.

c) Prerequisites

Students have learnt computer threats and computer viruses' protection; they will find it easy to apply the same skill in this new lesson.

d) Learning activity:

Guidance:

- This lesson is started by grouping student in pairs, then asking them to observe the figure that shows detected virus and threat.
- Under the guidance of the teacher, students discuss different function of antivirus engines and give at least 5 examples of antiviruses they know.
- The teacher gives guidance on how to do application activity 1.6

Answers:

1. Answers for this activity are available in the student book.

2. One computer has 5 detected viruses, the other one has a detected threat. The best solution is to remove those detected viruses and threats.

e) Application activity 1.6

Answers:

Answers for questions 1,2 and 3 are found in the student book. For answers that cannot be immediately found the teacher helps students refine the answers or do further documentation or search for them on the internet.

LESSON 7: Threats prevention

a) Learning objectives

List and describe different methods of threats prevention.

b) Teaching resources:

Students will need computers in the computer lab, projector for demonstrating examples to the class, student's book and internet connectivity for doing more research.

c) Prerequisites

Students have learnt computer threats and computer viruses' protection; they will find it easy to apply the same skill in this new lesson.

d) Learning activity:

Guidance:
- This lesson is started by grouping student in pairs, then asking them to observe the figure that shows detected virus and threat.
- Under the guidance of the teacher, students discuss the importance of logging to computer suing password
- Under the guidance of teacher, the students discuss the measures could be used to protect computers
- The teacher gives guidance on how to do application activity 1.7

Answers of activity 1.7

Answers for the activity 1, 2 and 3 for this section 1.7 are found in the student book. For answers that cannot be immediately found the teacher helps students refine the answers or do further documentation or search for them on the internet.

Application activity 1.7

Answers for 3 and 4 are found in the student book. For answers that cannot be immediately found the teacher helps students refine the answers or do further documentation or search for them on the internet.

End unit assessment answers

1. Computer security refers to techniques developed to safeguard

information and systems stored on computers.

2. Computer security is important because it prevent computer system from hardware failure, software failure, user errors, and theft of data, software, services, equipment.

3. Below are some cases of physical threats :

- Improper storage environment with high temperature, humidity, light, dust
- Over use mainly for physical contact media,
- Natural disaster such as fire, flood, earthquake
- Inadequate hardware maintenance,
- Hardware malfunction

4. Authorization policies define what an individual identity or group may access. Access controls or permissions/ privileges are the methods we use to enforce such policies. For example, imagine a database that contains both customer purchases and a customer's personal and credit card information. A merchant could create an authorization policy for this database to allow a marketing group access to all customer purchases but prevent access to all customer personal and credit card information, so that the marketing group could identify popular products to promote or put on sale.

5. Denial of service

6. The followings are what someone can meet when he/she violates computer security

- Virus
- Unwanted documents
- Website hacking
- Attacks through computer network
- Attack from removable media

7. Physical threats may include theft, vandalism and environmental damage while logical threats are those that may damage your software systems, data, or network without damaging your hardware.

8. It is a non-resident computer virus, which resides in an executable file. Whenever the infected file is executed, it infects the other files.

8. 1.c   2.d   3.b   4.a   5.e

1.6 Additional activities

1.What is the difference between anti-virus and anti-spyware?

Answer: Antivirus software are computer programs that attempt to identify, neutralize or eliminate virus while Anti-spyware is a type of program designed to prevent and detect unwanted spyware program installations and to remove those programs if installed

2.How a user can protect physical equipment of a computer?

Answer: - use physical equipment against fire -use metallic doors and windows against theft -use security camera, security guard and alarms to detect theft -use UPS to protect system failure and data loos due to the power failure

3.What is Firewall ?

Answer: Firewall is a network security device that monitors and filters incoming and outgoing network traffic based on an organization's previously established security policies.

1.6.2. REMEDIAL ACTIVITIES AND ANSWERS

1) What is computer security? Give the advantages of computer security to computer system

Answer: Computer security refers to techniques developed to safeguard information and systems stored on computers. The protection of data (information security) is important. It reduces the probability of hardware and software problems and it increases the security of data stored in computers

2)Define a computer threat. Differentiate physical threat to logical threat.

Answer: A threat is an activity/ attack/ situation that may happen, with the potential to cause serious damage. Physical threats are digital storage media and hardware that can damage or destroy the computer system while logical threats are events or attacks that remove, corrupt, deny access, or steal information.

3) What is an anti-virus? Give its importance to computer system

Answer: Antivirus software are computer programs that attempt to identify, neutralize or eliminate harmful software. It is important because it is used to prevent threats; including worms, phishing attacks, Trojan and other malware.

4) Why is it necessary to login to computer with a password? Answer: It is important to login to computer with password because the computer must be used with someone who know the password.

1.6.3 EXTENDED ACTIVITIES ANSWERS

Distinguish between the term security and threat

Answer: A state of feeling safe and protected while a threat, in the context of computer security, refers to anything that has the potential to cause serious harm to a computer system

Suggest solutions that can be used to safeguard a computer network Answer: Computer network need to be safeguard with anti-virus and firewall solutions. Good computer networks must meet performance levels expected. It should also be reliable, consistent, and meet recovery procedures and security criteria to maintain smooth flow of data in organization.

Explain the difference between a spyware and spam. Identify risks involved when your computer is infected with spyware

Answer: Spam is any message sent electronically that is unsolicited and bulk while spyware is a software codes installed on a computer without user's knowledge to monitor or supervise user activities.

2.1 Key unit competence

Write different documents format by using tools found in Ms Word

2.2.Prerequisite

Student learnt in ordinary level how to open Microsoft word, save a document, identify Microsoft word tool bar, insert object, etc. they have basic skills which can allow them to acquire competences they are supposed get in advanced word processing.

2.3 Cross-cutting issues to be addressed :

- **Financial education:** Through typing scenario related to money management and do related application
- **Gender education:** All students must get involved in class activities regardless of gender
- **Inclusive Education:** Learners with and without disabilities participate together in the same classes during teaching and learning process.
- **Peace and value** through typing a text describing peace

2.4 Guidance on introductory activity

The activities shown in the introductory activity are given to students as a homework at the end of Unit 2. The only thing to do in class is to project the different elaborated documents.

- Teacher makes student read the questions in the introductory activity and discuss on them.
- Students are put into groups so as to perform activities shown in the introductory activity which is given to them as a homework.
- Time is set aside to project the different groups' documents
- By analyzing the look of different documents presented the Teache

▪ becomes aware of the level of students in word and builds on that.

1.1 List of lessons/

#	Lesson title	Learning objectives	Number of periods
1	Text formatting	Describe different way of formatting a text Apply different methods to format a text of a word document	1
2	Paragraph formatting	Create and insert indent, spacing, bullets, numbering and alignment	1
3	Inserting table, picture and Shapes	Illustrate information with different objects in a document	3
4	Chart and SmartArt	Present information with different graphic	2
5	Header, footer and page number	Apply the style of header, footer and page number in document	1
6	Table of content and table of figures	Generating table of contents and inserting a list of figures and a list of tables	3
7	End unit Assessment		1

Lesson 1: Text Formatting

a) Learning objective

▪ Describe different way of formatting a text and apply those methods.

b) Teaching resources

Instructional materials required for teaching and learning this lesson are Computers, projector, soft documents, text books, and the internet

c) Prerequisites
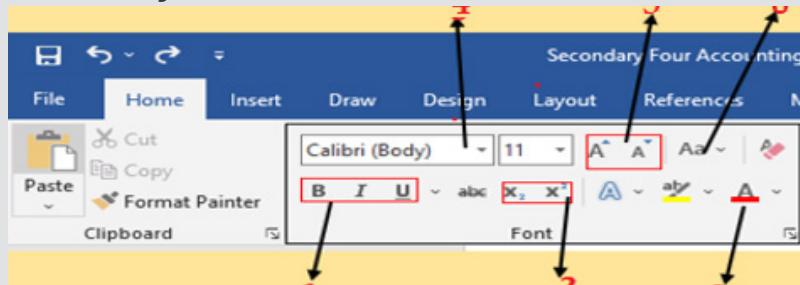
Student have prior knowledge about bold, italic and numbering list, add or remove borders, shading paragraph, find on paragraph group of Home tab. (ICT o'level S1)

d) Learning activities
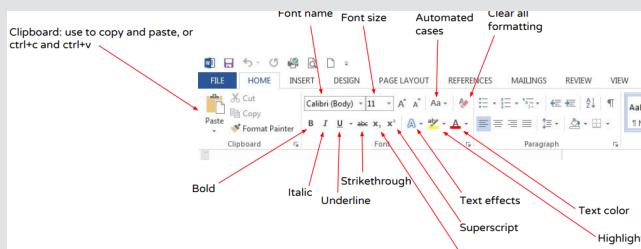
Guidance

▪ Under the teacher's guidance students create a small group (pair or three)
▪ Teacher tells students in group to open MS word and apply the required steps to explore the commands from font group
▪ Under the teacher's guidance students Write answers in a document created.

Answers to activity 2.1

1) For question 1. students open Ms Word. the teacher helps those having difficulties to do it.

2) By placing a mouse cursor on each command, MS word provide the Name and Function for each command.

3) Students give the function of each command whose name was identified in question 2.

e)Answer to Application activity 2.1

1. Individually student write the function of the following commands in MS word:

(a)Font size, (b) font color, (c) font style, (d) bold, (E) italic, (f) Change case

The answers are available in the students' book (Unit2: Text formatting content)

2. Under the teacher's guidance Students open a blank document in Ms Word then type at least four lines of text which describes "her/his personal Background "and apply the required steps to:

a) Change font face of the first and second sentences to "Poor Richard", font size to "14", font color to "Blue" and make the sentences italic.

b)Change the third and fourth sentence to the font type" Tahoma", font size "12", font color "Red" and underline those sentences. All steps on how to accomplish this are available in the students' book. (Unit 2: Text formatting content)

Lesson 2: Paragraph formatting

a) Learning objectives

- Create and insert indent, spacing, bullets, numbering and alignment

b) Teaching resources

Computers, projector, soft documents, text books, and the internet

c) Prerequisites

Student have prior knowledge about bullets numbering and numbering list, add or remove borders, shading paragraph, find on paragraph group of Home tab. (ICT o'level S1)

d) Learning activities

Guidance
- Under the teacher's guidance students create a small groups (pair or three)
- Teacher tells students to type a text and apply the required steps to change font type, font size, font color,
- Teacher demonstrates how to perform different actions shown in the student book and students follow suit.

▪ Teacher moves around to help student that may be having difficulties

__Answers to activity 2.2__

1) Propose the students to position a pointer/curser on each mentioned icons command from Paragraph group in home tab MS word provide the name and function of each command.

The exact, the answers on this question are available in paragraph formatting content(unit2)

✓ Teacher can explain other commands which are not mentioned in question

2) Students Type text which describes the importance of computer security in different fields and try to apply on asked paragraph formatting find in paragraph group.

And teacher facilitate them so that to enter in new lesson with prior knowledge/ skills. All steps on how to accomplish this are available in the students 'book (unit 2: Paragraph formatting)

e) Answer to Application activities 2.2

In small groups (pair or three) Students has to type a text information from their school and apply on it all asked format by following all steps in student book (unit 2: paragraph formatting content)

__Lesson 3: Inserting table, Picture and shapes__

a) Learning objective

▪ Illustrate information with different objects in a document

b) Teaching resources

▪ Computers, projector, soft documents, text books, and the internet

c) Prerequisites

▪ Ordinary level ICT S2: Student have knowledge about objects in document (Table, picture, Shapes, Charts, SmartArt etc)

d) Learning activities

Guidance
- Under the teacher's guidance students organize a small groups (pair or three)
- Teacher demonstrates how to perform different actions shown in the student book and students follow suit.
- Teacher provides the resources to facilitate students in activity in students search and discuss about tables, pictures and Shapes.
- Teacher moves around to help student that may be having difficulties

---

Answers to Activity 2.3

Students do research and discover description of tables, pictures and Shapes tools. The answer of this is available in the students 'book (unit 2: Inserting table, picture and shapes content)

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e) Answer to Application activities 2.3

Students make a table by following the provided instructions.

Assess if the following have been done:

1. A new document has been created.

2. A table with three columns and five rows is inserted in the document.

3. Three columns have been added to the right of the column containing house.

4. Two rows have been added after the row containing Nyamahoro's details.

5. A row is added on top and the title "Examination Analysis" typed.

6. Document saved as Table 2.

7. The row containing Nyamahoro's details has been deleted.

8. The following details are added in the three columns that were inserted: a. Column 1(History, 67, 89, 98), Column 2 (Business, 77, 56, 34) and column 3 (English, 74, 87, 65).

9. Cells containing the title are merged.

10. Cell containing the name Habimana is split into two.

11. Document is saved as Mytable

Lesson 4: Chart and Smart Art

a) Learning objective

- Present information with different graphic

b) Teaching resources

- Computers, projector, soft documents, text books, and the internet

c) Prerequisites

- Ordinary level ICT S3: Student have knowledge about Graphic data presentation in document (Charts and SmartArt etc)

d) Learning activities

Guidance

- Under the teacher's guidance students organize a small group (pair or three)
- Teacher tells students to observe the charts were created and apply the required steps to the same by using similar data,
- Teacher demonstrates how to perform different charts shown in the student book and students follow suit.
- Teacher moves around to help student that may be having difficulties

Answers to Activity 2.4

1. Students create different charts as instructed in the question. All steps on how to accomplish this are available in the students' book (unit 2: Chart and SmartArt content)principles help to maintain discipline not only in business but also in daily life.

    a) name of a figure is "Hierarchy SmartArt ".

    b) Place the insertion point in the document where you want the SmartArt graphic to appear.

    ▪ From the Insert tab, select the SmartArt command in the Illustrations group.

    ▪ dialog box will appear. Select a category on the left, choose the hierarchy SmartArt, then click OK

Answer to Application activities 2.4

1. Students create a table and different charts as instructed in the question

2. The steps they should be flow on how to accomplish activity are available in the students' book (unit 2: Chart and SmartArt content)

Lesson 5: Header, footer and page number

a) Learning objective

Apply the style of header, footer and page number in document

b) Teaching resources

Computers, projector, soft documents, text books, and the internet

c) Prerequisites

In Ordinary level ICT, student learnt how to insert page number as they read book they always seen the header, footer even if they not yet know how to call them. This, will facilitate them to acquire new knowledge of describing inserting header and footer.

d) Learning activity 2.5

Guidance

- Teacher introduces new lesson by asking students to brainstorm in pairs the meaning the following term: header and footer.
- Teacher asks students to take hard book and look on the top and the bottom of page and tell him/ her what they see. Which is header and footer.
- From there ask them to state common things find in header and footer like date, authors, chapter, unit title, etc.
- Teacher guides students to follow the steps of inserting header, footer page

Answers to activity 2.5

1. Students give many answers to the question but the following elements should be in the answer definition of header, footer and page number

2. Definition of header, footer and page number steps for inserting them in document

3. All answers on this activityor steps to accomplish this are available in the student' book (unit 2: Header, footer and page number)

e) Application activities 2.5

The steps to be followed to perform this application activity are available in students' book (unit2: Header, footer and page number)

Lesson 6 : Creating and updating a table of contents

a) Learning objectives

Create and update a table of content

b) Teaching resources

In teaching and learning this lesson, computers, projector, soft documents, text books, and the internet for research are needed for effective learning.

c) Prerequisites

Students learnt in ordinary level Microsoft words window environment and have

prior knowledge about **Heading** on home tab. And while reading books they often looking in table of content of given book. So, constructing new knowledge, skills, will be based on that past experience.

d) Learning activity 2.6

Guidance

- Teacher asks and guides students to brainstorm the advantages of creating table of content in pairs
- For managing time, teacher tells students to copy a text of 3 pages from the softcopy book available on REB website.
- Using projector, teacher demonstrate step by step the process of creating table of content. And on their computers, students follow all the steps shown by teacher then create table of content
- After creating table of content, teacher demonstrate how to update created table of content then the students practice the process on their computers

a)Answers to activity 2.6

Students copy a text of 3 page which describe computer hardware and software save it as "information, communication technology" from softcopy books available on REB website. The process of applying all asked things on this activity is shown in student's book on both two sections font and creating table of content.

e)Answer to Application activity 2.6

All practical and the results of this activity are assessed by ensuring that students follow the right steps in using the MS Word features tested on during demonstration.

2.6 Additional information for teachers

Here is a window showing the page layout tools that are used in Word and their uses:

How to Cross Reference Footnotes and Endnotes?

To use the same footnote or endnote more than once throughout the text, there's an easy way to do it without having to insert the same thing over and over again.

Step 1: Place the insertion point where the reference is inserted in the text. On the **References tab**, click the **"Cross-Reference"** button.

Step2: In the Cross-Reference w i n d o w, choose e i t h e r "Footnote" or "Endnote" from the "Reference Type" dropdown menu.

Step 3: Next, click the **"Insert Reference To"** dropdown menu.

Word lets to create hyperlinks between cross-references means ~~so you can~~ it is easy to find the same footnote everywhere it appears in the document.

2.7. Skills lab 1

For this skills lab, students will be able to use write a beautiful word document with different formats using the tools found in Ms Word

Guidance to the lab:

This lab activity will be conducted in school but not necessarily during the normal teaching hours. In fact students will have to do extensive research on topics like school background, school vision, etc

i) Build

- Before starting this skills activity first students discuss in group what they are going to do. This is done in order to avoid that students do a work which is outside what was expected
- Let students present the work they have done. Come up with a summary of what will be done for this skills lab
- Divide student in groups. Make sure that each group member has a task and actively participates
- Student first do their research to gather information from different people on the history of their school

ii) Practice

- After gathering the information, students engage in the writing activity. Make sure the different groups have an idea of the structure of the document they are going to write.

iii) Presentation

When the timeframe given for the skills lab activity to be finished students present their findings. As a teacher first you will have told students the criteria of evaluation before the activity starts. Other students appreciate the structure,

the format and the content of the document presented

iv)Conclusion

Let students make a summary on the following main points for a good document:

- Structure of a document
- The format of the document
- Content of the document

Let also students briefly give the main points of the information about their school

End unit assessment

1. All practical and the results of the practical's are assessed by ensuring that learners follow the right steps in using the MS Word features tested on during demonstration. The steps used to perform this activity

2. Differentiate between bullets and numbers.In bulleted lists, each paragraph begins with a bullet character in numbered lists each paragraph begins with an expression that includes a number or letter and a separator such as a period or parenthesis the number in a numbered list are updated automatically when you add or you remove paragraph in the list

3. Describe three types of indentations that can be applied in a document

Indent Type	Results
First Line Indent	Indents just the first line of a paragraph a specified amount, leaving all other lines in the paragraph alone.
Left Line Indent	Indents all the lines of the paragraph a specified distance from the left margin.
Right Line Indent	Indents all the lines of the paragraph a specific distance from the right margin.
Hanging Indent	Indents all the lines of the paragraph a specific distance from the left margin except the first line.

1.1. Additional activities

2.8.1 Remedial activities

1. Open new document in MS word and write the following text:

You may add frequently used tools to your quick access bar by right clicking the tool button and selecting "add to Quick Access toolbar"

1. Do the following with the created document:

2. Change the Font-Type to "Book Antiqua".

3. Change the Font Size to 12 and Line Spacing ="2.0"

4. Change Heading 1 to "Arial Black" and Font-size ="14"

2.8.2 Consolidation activities

1) Write a text on any topic of ICT and do the following

a) Change the Header "your name at the top left of the top margin"

b) Change the Footer : "I am enjoying the ICT class "

c) Change your left and right margins to 1.5", double space, Centre the page when finished.

2) Write a text on why to make a budget and format it accordingly to make it look more beautiful. This text should have at least 5 lines.

Create a document of six pages on the topic of Impact of computers to Rwandans

Page 1: should have the title of the topic, definition of term computer and Name of presenter

Page 2: should have the advantages of computers to Rwanda people. Link a suitable image on this page.

Page 3: should have the disadvantages of computers to Rwanda people.

Page 4: should have uses of computers in Rwanda.

Page 5: should have list of hardware and software or programs used in your school in form of a 2-column table

Page 6: should have a column chart about number of computers used by different classes in your school. Use the data in the table below to create a 3D column chart.

Class	Number of computers used
S1	130
S2	160
S3	200
S4	60
S5	75
S6	90

Provide a suitable chart title, axis titles and page title.

Q2. following the guidelines below

Use a suitable background design of your choice

Using footer Insert page number on all pages.

3.1 Key unit competence

Write different documents format by using tools found in Ms Word

Perform different calculations and summarize data using Excel provided tools.

3.2. Prerequisite

Students should have knowledge and skills related to spreadsheet learnt in **senior two** in Spreadsheet Basics and **senior three** in advanced spreadsheet.

3.3. Cross-cutting issues to be addressed:

As a teacher, when you conduct lessons, you could consider the following different cross cutting issues to be addressed throughout the lessons:

- **Financial education:** While exploring different templates used in Excel, students are made
- familiar with the loan amortization template and here they learn concepts related to loans, interest rates and capital. They evaluate the interest paid for different interest rates.
- **Standardization culture:** While learning excel formulas, learners become aware that those formulas are the same as the ones learnt in Mathematics and therefore learners are aware that mathematics is applicable in real life situation.
- **Gender education:** Students must be aware that ICT in Accounting is not a subject appropriate only for girls or boys. Excel lessons especially those related to mathematical functions are appropriate for both sexes not for only boys.

3.4. Guidance on the introductory activity

- The teacher asks each student to open the computer and asks students to do the introductory activity individually
- Under the guidance of the teacher, students try to answer questions of an activity
- The teacher invites some students to presents their works to the class and the teacher provides comments to the whole class.
- The teacher tells the students that in the coming lessons they will have complete answers.

3.5 List of lessons

No	Lesson title	Learning objectives	Number of periods
1	Worksheet and workbook basics	Manipulate a worksheet and workbook Create loan amortization worksheet	1
2	Cell basics		2
3	Arithmetic operators in formulas	Apply arithmetic operators in Excel formulas	1
4	The use of functions	Apply mathematical functions in formulas to do some calculations	2
5	Tables and borders design	Create tables and apply borders	1
6	Creation of charts	Create and interpret different types of charts	2
7	Data organization	Sort data using both ascending and descending order	2

8	Financial functions	Apply the financial functions to calculate financial information.	2
9	Conditional formatting	Apply different types of conditional formatting	2
10	Data Validation		1
11	Creation of Pivot Tables in a spreadsheet	Create a pivot table and explain its importance	1
12	Creating Excel data entry forms	Create Excel data entry forms	1
13	End unit assessment		1
Total number of periods			20

Lesson 1: Worksheet and workbook basics

a) Learning objective

- Manipulate a worksheet and workbook
- Create loan amortization worksheet

b) Teaching resources

The lesson to be conducted effectively, the resources below are needed:

Students need to use computers connected to internet, Projector for presenting their findings to the whole class, ICT books and Mathematics books or further documentation.

c) Prerequisites

Students are now familiar with application programs installed in computers. Spreadsheet Basics and advanced spreadsheet learnt in **senior two and senior three**, they can therefore apply the same reasoning on the use of worksheet and workbook.

d) Learning activities:

Guidance:

- The teacher introduces the lesson by making students do the activity 7.1. At the end of this activity students, under the guidance of the teacher discover the lesson title
- By the guidance of the Teacher, students get the difference between **a worksheet and a workbook** and brainstorm on it.
- Individually and under the guidance of the Teacher, students create a new workbook, insert worksheets, rename them and delete them
- Students do the questions in the activity 3.1 that were not answered at the beginning of the lesson.
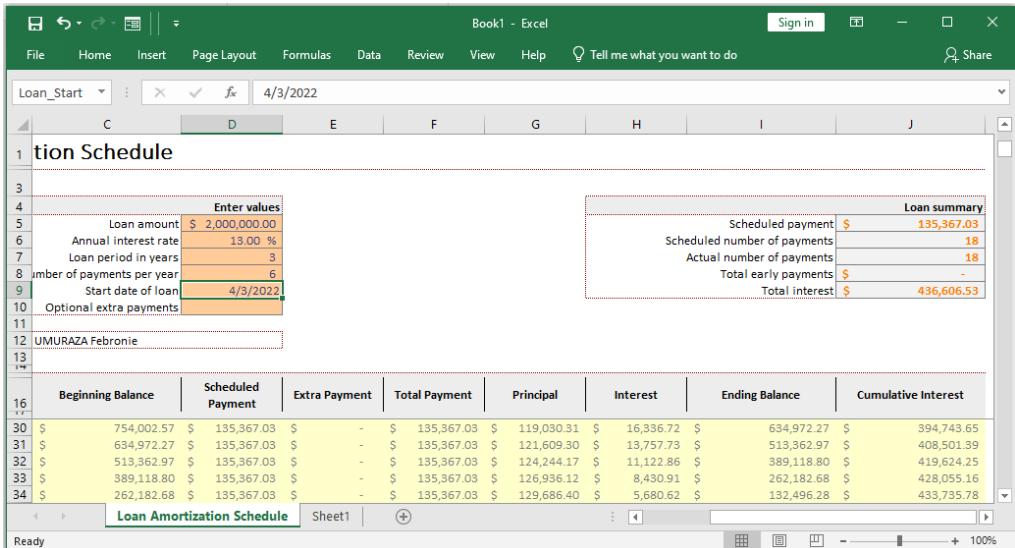
Answers for activity 3.1

1. A worksheet is made of rows and columns that intersect each other to form cells where data is entered. It is capable of performing multiple tasks like calculations, data analysis, and integrating data whereas a workbook is a collection of one or more worksheet in a single file.

2. **Below are some features of Ms Excel:**

   a) **AutoFormat:** It allows the Excel users to use predefined table formatting options.

   b) **AutoSum:** AutoSum feature helps us to calculate the sum of a row or column automatically by inserting an addition formula for a range of cells.

   c) **List AutoFill:** It automatically develops cell formatting when a new component is added to the end of a list.

   d) **AutoFill:** This feature allows us to quickly fill cells with a repetitive or sequential record such as chronological dates or numbers and repeated documents. AutoFill can also be used to copy functions. We can also alter text and numbers with this feature.

   e) **AutoShapes:** AutoShapes toolbar will allow us to draw some geometrical shapes, arrows, flowchart items, stars, and more. With these shapes, we can draw our graphs.

   f) **Wizard:** It guides us to work effectively while we work by displaying several helpful tips and techniques based on what we are doing. Drag and Drop feature will help us to reposition the record and text by simply dragging the data with the help of the mouse.

   g) **Charts:** This feature will help you to present the data in graphical form by using Pie, Bar, Line charts, and more.

h) **PivotTable:** It flips and sums data in seconds and allows us to execute data analysis and generating documents like periodic financial statements, statistical documents, etc. We can also analyze complex data relationships graphically.

i) **Shortcut Menus:** The shortcut menu helps users to make the work done through shortcut commands that need a lengthy process.

j) **3.** For the discussion of:

k) Amortization of a loan, refer to the student book in the section 3.1.3 Loan amortization worksheet

l) Different steps of creating a loan amortization schedule are shown in the student book in the section 3.1.3 (A) Creation of loan amortization worksheet

1)Steps of Addition of a new,deletion and renaming a worksheet refer

1)Steps of Addition of a new,deletion and renaming a worksheet refer

LESSON 2: Cell basics

a) Learning objective

- Explain types of cell reference
- Perform calculations using cell references
- Use different types and styles of font

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, ICT books and accounting books for further documentation.

c) Prerequisites/Revision/Introduction

Students are already familiar with application programs installed in computers. Spreadsheet Basics, advanced spreadsheet learnt in **senior two, senior three and senior four unit2 of Word Processing**, they can therefore apply the same skills to align text horizontally and vertically, do different calculations using cells references and apply different styles of fonts.

d) Learning activities:

Guidance:

- By the guidance of the Teacher, students create the table then give the reference of General total cell and Total price for each item.
- Individually and under the guidance of the Teacher, students calculate the Total price and General total using cells references.

Answers for activity 3.2

Answers for activity

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	400000	=C2*D2
2	RAM	12	25000	=C3*D3
3	Keyboard	20	7000	=C4*D4
4	Mouse	15	4000	=C5*D5
5	Power cables	8	5000	=C6*D6
General Total				=E2+E3+E4+E5+E6

a) Application activities 3.2

b) Find an answer in the student book, on 3.2.2, Text Alignment, section

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW 1,200,000
2	RAM	12	FRW 25,000	FRW 300,000
3	Keyboard	20	FRW 7,000	FRW 140,000
4	Mouse	15	FRW 4,000	FRW 60,000
5	Power cables	8	FRW 5,000	FRW 40,000
General Total				FRW 1,740,000

c) an answer in the student book, on 3.2.2, Text Alignment, section

LESSON 3: Arithmetic operators in formulas

a) Learning objective

Apply arithmetic operators in Excel formulas

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, ICT S4 student books .

c) Prerequisites/Revision/Introduction

Students are already familiar with application programs installed in computers. Spreadsheet Basics, advanced spreadsheet learnt in senior two and senior three they can therefore apply the same skills to perform arithmetic operations such as addition, subtraction, division and multiplication.

d) Learning activities:

Guidance:
- By the guidance of the Teacher, students explain what they do understand by formulas and discuss about arithmetic operators.
- Individually and under the guidance of the Teacher, students perform different calculations using arithmetic operators **(+, /, *, -).**
- Students do the questions in the activity 3.4 that were not answered at the beginning of the lesson.
- The Teacher gives guidance on how to do application activity 3.4

Answers for activity 3.3

1. An operator , refer to the student book in the section 3.3 Arithmetic operators in formula

2. Examples of arithmetic operators and its uses, refer to the student book in the section 3.3 Arithmetic operators in formula

ESSON 4: The use of functions

a) Learning objective

Apply mathematical functions in formulas to do some calculations

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 Student books for further documentation.

c) Prerequisites/Revision/Introduction

Students are now familiar with Microsoft excel spread sheet. As they learnt in Unit 3: spreadsheet in section arithmetic operators in formula Senior four, therefore they can apply the same reasoning on Using functions.

d) Learning activities:

Guidance:

LThe teacher demonstrates how to calculate Total price, General total, minimum and maximum using spreadsheet functions.

▪ The teacher gives guidance on how to do the application activity3.4

> **Answers for activity 3.4**
> a. Parts of a function, refer to the student's book, section 3.4 The use of functions.
> b. Students do a research using internet about types of functions available in Excel.

There are a variety of functions available in Excel. Here are some of the most common functions in excel:

▪ **SUM**: This function **adds** all of the values of the cells in the argument.

▪ **AVERAGE**: This function determines the **average** of the values included in the argument. It calculates the sum of the cells and then divides that value by the number of cells in the argument.

▪ **COUNT**: This function **counts** the number of cells with numerical data in the argument. This function is useful for quickly counting items in a cell range.

▪ **MAX**: This function determines the **highest cell value** included in the argument.

- **MIN**: This function determines the **lowest cell value** included in the argument.
- **PRODUCT:** This function performs the **product of thecells** included in the argument.

e)Application Activity 3.4

Students type the information given in a table and do the calculations of the "Total Price" column content. For other guidance on how to do it students refer to the student book unit 3 in the section about "The use of functions"

LESSON 5: Tables and borders design

a) Learning objective

Create tables and apply borders

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 students books for further documentation.

c) Prerequisites/Revision/Introduction

Students are now familiar with Microsoft excel spread sheet. As they learnt in Senior four Unit 3 spreadsheet, section of cells basics and cells references where they entered and manipulated data, therefore they can apply the same reasoning to create table and design borders.

d) Learning activities:

Guidance:
- The lesson starts by analyzing questions in the activity 3.5. If answers can't be found, students are told that by the end of the lesson they will be able to answer them.
- By the guidance of the Teacher, individually every student creates a table and apply borders on the same table.
- Teacher walks around and sees whether every student is doing well activity as requested.
- The Teacher gives guidance on how to do application activity 3.5

The answers on this activity can be answered by referring to the student's book content, section 3.5. Tables and borders design

d) Application Activity 3.5

1. Steps to delete borders or to remove borders ,refer to student book 3.5 Tables and border design section.

2. Follow these steps:

i) Create the table which has **No, Items, Quantity, Unit price and Total Price** as headings (columns of the table), then number 1 to Maximum as rows, after that respectively enter all provided data. For General Total cell, select four cells combined together then click on merge and center tool to make four cells into one cell. Do the same for Minimum and Maximum cells.

ii) After selecting the cell containing data, click on borders tools

iii) Click on more borders

iv) From border style, choose an outline border, and respectively choose border styles to be used vertically and horizontally.

v) Then click OK.

The end result should be the following:

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	400000	
2	RAM	12	25000	
3	Keyboard	20	7000	
4	Mouse	15	4000	
5	Power cables	8	5000	
General Total				
Minimum				
Maximum				

LESSON 6: Creation of charts

a) Learning objective

Create and interpret different types of charts

b) Teaching resources

Computers in the computer laboratory , Projector for projecting their work, and ICT Student' books for Senior Four for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel spread sheet.   As they learnt in Senior four Unit 3 spreadsheet, section of table and border design where student entered and manipulated data, therefore they can apply the same reasoning to create, analyze and interpret different types of charts.

d) Learning activities:
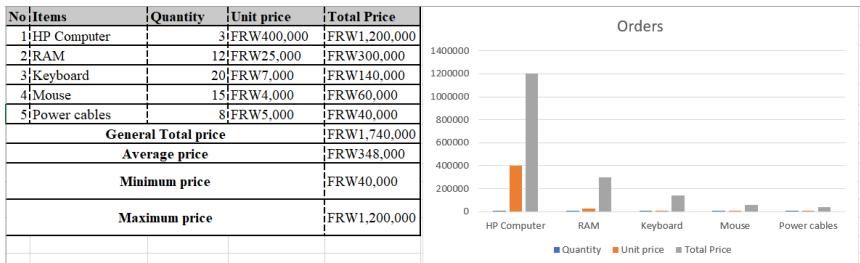
Guidance:
- The lesson starts by doing questions in the activity 3.6..
- By the guidance of the Teacher, individually every student creates different types of charts using spreadsheet.
- Teacher walks around and sees whether every student is doing well activity as requested.
- The Teacher gives guidance on how to do application activity 3.7

> **Answers for activity 3.6**
>
> The answers on this activity can be answered by referring to the student's book content, section 3.6. Creation of charts
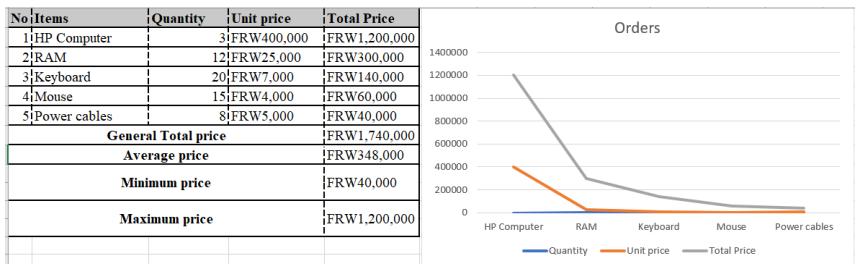
e) Application activities 3.7
- Column chart

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW1,200,000
2	RAM	12	FRW25,000	FRW300,000
3	Keyboard	20	FRW7,000	FRW140,000
4	Mouse	15	FRW4,000	FRW60,000
5	Power cables	8	FRW5,000	FRW40,000
	General Total price			FRW1,740,000
	Average price			FRW348,000
	Minimum price			FRW40,000
	Maximum price			FRW1,200,000

- Column chart

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW1,200,000
2	RAM	12	FRW25,000	FRW300,000
3	Keyboard	20	FRW7,000	FRW140,000
4	Mouse	15	FRW4,000	FRW60,000
5	Power cables	8	FRW5,000	FRW40,000
	General Total price			FRW1,740,000
	Average price			FRW348,000
	Minimum price			FRW40,000
	Maximum price			FRW1,200,000

LESSON 7: Data organization

a) Learning objective

Sort data using both ascending and descending order

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for presentation of the work, and ICT S4 student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel spread sheet. As they learnt in Senior four Unit 3 spreadsheet, section of table design, border design and creation of charts where student entered and manipulated data, therefore they can apply the same reasoning to sort and filter data in an easy way.

d) Learning activities:

Guidance:

- The lesson starts by analyzing questions in the activity 3.7. If answers can't be found, students are told that by the end of the lesson they will be able to answer them.
- By the guidance of the Teacher, individually every student sorts and filters data from a particular given table collection of data.
- Teacher walks around and sees whether every student is doing well activity

as requested.
- Students do the questions in the activity 3.7 that were not done correctly at the beginning of the lesson.
- The Teacher gives guidance on how to do application activity 3.7

Answers for activity 3.7

The types of sorting and definition of filtering data refer to the student book section 3.7 Data organization.

a) Application activity 3.7

1) Items after sorting items by ascending order:

- Column chart

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW1,200,000
2	RAM	12	FRW25,000	FRW300,000
3	Keyboard	20	FRW7,000	FRW140,000
4	Mouse	15	FRW4,000	FRW60,000
5	Power cables	8	FRW5,000	FRW40,000
	General Total price			FRW1,740,000
	Average price			FRW348,000
	Minimum price			FRW40,000
	Maximum price			FRW1,200,000

- Column chart

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW1,200,000
2	RAM	12	FRW25,000	FRW300,000
3	Keyboard	20	FRW7,000	FRW140,000
4	Mouse	15	FRW4,000	FRW60,000
5	Power cables	8	FRW5,000	FRW40,000
	General Total price			FRW1,740,000
	Average price			FRW348,000
	Minimum price			FRW40,000
	Maximum price			FRW1,200,000

LESSON 7: Data organization

a) Learning objective

Sort data using both ascending and descending order

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for presentation of the work, and ICT S4 student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel spread sheet. As they learnt in Senior four Unit 3 spreadsheet, section of table design, border design and creation of charts where student entered and manipulated data, therefore they can apply the same reasoning to sort and filter data in an easy way.

d) Learning activities:

Guidance:

- The lesson starts by analyzing questions in the activity 3.7. If answers can't be found, students are told that by the end of the lesson they will be able to answer them.
- By the guidance of the Teacher, individually every student sorts and filters

data from a particular given table collection of data.

- Teacher walks around and sees whether every student is doing well activity as requested.
- Students do the questions in the activity 3.7 that were not done correctly at the beginning of the lesson.
- The Teacher gives guidance on how to do application activity 3.7

Answers for activity 3.7

The types of sorting and definition of filtering data refer to the student book section 3.7 Data organization.

Application activity 3.7

1) Items after sorting items by ascending order:

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW1,200,000
3	Keyboard	20	FRW7,000	FRW140,000
4	Mouse	15	FRW4,000	FRW60,000
5	Power cables	8	FRW5,000	FRW40,000
2	RAM	12	FRW25,000	FRW300,000

Note: For more clarification about how to sort, refer to the student's book content, section 3.7., point of sorting.

v) After sorting Total prices by Descending order

No	Items	Quantity	Unit price	Total Price
1	HP Computer	3	FRW400,000	FRW1,200,000
2	RAM	12	FRW25,000	FRW300,000
3	Keyboard	20	FRW7,000	FRW140,000
4	Mouse	15	FRW4,000	FRW60,000
5	Power cables	8	FRW5,000	FRW40,000

N ▾	Items list ▾	Quantit ▾	Unit Pric ▾	Total Pric ▾
2	RAM	12	25,000	300,000
4	Mouse	12	4,000	60,000

2.

Note: For more clarification about how to filter, refer to the student's book content, section 3.7., point of filtering.

LESSON 8: Financial functions

a) Learning objective

Apply the financial functions to calculate financial information.

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 Student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel spread sheet. As they learnt in Senior four Unit 3 spreadsheet, section of use of functions where student applied different formulas to perform different calculations, therefore they can apply the same reasoning to apply different type of financial functions.

d) Learning activities:

Guidance:

▪ The lesson starts by analyzing questions in the activity 3.8. If answers can't be found, students are told that by the end of the lesson they will be able to answer them.

▪ By the guidance of the Teacher, individually every student uses FV, NPV and

DB financial functions.
- Teacher walks around and sees whether every student is doing well activity as requested.
- Students do the questions in the activity 3.8 that were not done correctly at the beginning of the lesson.
- The Teacher gives guidance on how to do application activity 3.8

> **Answers for activity 3.8**
>
> The answers on this activity can be answered by referring to the student's book content, section 3.8. Financial functions

e) Application activities 3.8

1) The DB function uses the following arguments:
   - **Cost** (required argument): This is the initial cost of the asset.
   - **Salvage** (required argument): The value of the asset at the end of the depreciation.
- **Life** (required argument): This is the useful life of the asset or the number of periods for which we will be depreciating the asset.
- **Period** (required argument): The period for which we wish to calculate the depreciation for.
- **Month** (optional argument): Specifies how many months of the year are used in the calculation of the first period of depreciation. If omitted, the function will take the default value of 12.

2)

	A	B
19	Rate of return	14%
20	years	8
21	payment per period	FRW15,000
22	Principal	FRW2,500,000
23	**Future value**	-FRW7,329,957

Note: *for this case, the Future value is calculated as following:*

=FV (B19, B20, B21, B22)

LESSON 9: Conditional formatting

a) Learning objectiv

- Apply different types of conditional formatting

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 Student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel spread sheet. As they learnt in Senior four Unit 3 spreadsheet, sorting and filtering where student displayed information which fulfill particular conditions, therefore they can apply the same reasoning to apply conditional formatting on data.

d) Learning activities:

Guidance:
- Students open Burera Ltd Sales data using spreadsheet software. Then students start to export Burera Ltd Sales data.xls to burera Ltd sales data.pdf
- The Teacher gives guidance on how to do application activity 3.9

Answers for activity 3.9

All steps to perform the Activity 3.9 are clearly detailed in Students Book. 3.9 Conditional formatting.

e)Application activities 3.9

Steps to answers this activity refer to the student's book content, section 3.9

LESSON 10: Data validation

a) Learning objective

Apply data validation on Excel data and explain its importance.

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 Student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel Spread sheet as they learnt it in Senior four Unit 3 spreadsheet, cells basics where student enterer data into cells, therefore they can use the same skills to apply different ways for validating data.

d) Learning activities:

Guidance:

The lesson starts by analyzing questions in the activity 3.10. If answers can't be found, students are told that by the end of the lesson they will be able to answer them.

By the guidance of the Teacher, individually every student applies data validation options.

Teacher walks around and sees whether every student is doing well activity as requested.

Students do the questions in the activity 3.10 that were not done correctly at the beginning of the lesson.

The Teacher gives guidance on how to do application activity 3.10

Answers for activity 3.10

a.The answers on this activity can be answered by referring to the student's book content, section 3.10.

b.Excel data validation is a feature that allows you to control the type of data entered into your worksheet. For example, Excel data validation allows you to limit data entries to a selection from a dropdown list and to restrict certain data entries, such as dates or numbers outside of a predetermined range.

e)Application activities 3.10

All steps to answers to these activities refer to the student's book content, section 3.10.

a.

No	Names	Age	Date of birth	Country					
1	Hagenimana	65	5/8/1950	RWANDA					
2	Kajugiro	70							
3	Gatsinzi	80							
4	Kabera								
5	Samvura								

Age
Enter age between 60 and 70

Microsoft Excel ✕

❌ This value doesn't match the data validation restrictions defined for this cell.

[Retry] [Cancel] [Help]

b.

No	Names	Age	Date of birth	Country					
1	Hagenimana	65	5/8/1950	RWANDA					
2	Kajugiro		12/5/1961						
3	Gatsinzi								
4	Kabera								
5	Samvura								

Date of Birth
Date of birth shoud not exceed 1960

Microsoft Excel ✕

❌ This value doesn't match the data validation restrictions defined for this cell.

[Retry] [Cancel] [Help]

C. Students do a question of an activity by guidance of a teacher.

LESSON 11: Pivot tables in Excel

a) Learning objective

- Create a pivot table and explain its importance

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 Student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel Spread sheet as they learnt it in Senior four Unit 3 spreadsheet, cells basics where student enterer data into cells, therefore they can use the same skills to create a pivot table

d) Learning activities:

Guidance:

▪ By the guidance of the Teacher, individually every student do an activity
▪ Teacher walks around and sees whether every student is doing well activity as requested.

The Teacher gives guidance on how to do application activity 3.11

Answers for activity 3.11

a.The answers on this activity can be answered by referring to the student's book content, section 3.11 Pivot tables in Excel

e) Application activities 3.11

By the guidance of the teacher,every student does an activity using a computer.

LESSON 12: Excel data entry forms

a) Learning objective

Create Excel data entry forms

b) Teaching resources

Computers in the computer laboratory for doing practice, Projector for projecting their work, and ICT S4 Student books for further documentation.

c) Prerequisites

Students are now familiar with Microsoft excel Spread sheet as they learnt it in Senior four Unit 3 spreadsheet, cells basics where student enterer data into cells, therefore they can use the same skills to create an Excel data entry form

d) Learning activities:

Guidance:

- By the guidance of the Teacher, individually every student do an activity
- Teacher walks around and sees whether every student is doing well activity as requested.
- The Teacher gives guidance on how to do application activity 3.12

Answers for activity 3.12

The answers on this activity can be answered by referring to the student's book content, section 3.12 Excel data entry forms

---

e)

---

e) Application activities 3.12

Students create the given Excel data entry form by the guidance of a teacher

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3.6. Skills lab 2

For this lab, students will be able to perform different calculations involving budgeting for an event.

Guidance to the lab:

This activity will be performed in class. Students will identify an event that may be attended by everyone in the school and prepare a budget for it using Excel..

i) Build

- Help students divide themselves in groups then let them prepare an event. It is preferable that each group should have their event (different groups should have different events)
- Let the different groups understand which details should be included in the budgets.

ii) Practice

- Guide the groups so that they identify all the items that should appear in their budgets
- Now the different groups prepare their budget.

iii) Presentation

When the time given for the skills lab to be finished, let the different groups present their budget,. As the groups present, the other students ask questions

for more clarifications

iv)Conclusion

Let students make a summary on the following main points for a good document:
- How to make a budget in Excel
- Which formula to use

3.7. End Unit Assessment

Answer Q1

Definition of
- Loan amortization, refer to student book 3.1.3 Loan amortization worksheet section
- data validation ,refer to student book 3.10. Data Validation

Answer Q2:

Financial functions and their syntaxes are discussed in student book , 3.8. Financial functions

Answer Q3:

The uses of a pivot table are discussed in student book. 3.11. Pivot tables in Excel section

Answer Q4:

steps of applying conditional formatting using data bars,refer to student book

3.9. Conditional formatting

Answer Q5:

Under the guidance of a teacher ,students answer question 5

Answer Q6:

Under the guidance of a teacher ,students answer question 6

4.1 Key unit competence

Create a power point presentation to address a bigger audience

4.2 Prerequisite

Students have knowledge and skills related to presentation as they learnt Unit 6 on Presentation in Senior 3. The basic knowledge they got in this unit will enable them to easily learn this new unit

4.3 Cross-cutting issues to be addressed

Peace and value education: Students must be aware that presentations should not be offensive, they should use appropriate language while presenting and should consider that in the audience there are people of different culture who can be offended easily.

Gender education: learners are to be aware that to conduct a good presentation or for a presentation to be good the presenter does not have to be male or female

Standardization culture: While presenting, students must have the culture of not using terms, words, pictures and gestures that are against the Rwandan culture.

4.4 Guidance on the introductory activity

- The teacher organizes learners into pairs or three and instructs them to answer questions in the introductory activity
- The teacher gives guidance wherever learners want one.
- The teacher invites the students to present their findings by using a projector
- The teacher asks students to evaluate findings and decide whether

PowerPoint presentation program is necessary or can be replaced by other programs.
- The teacher tells student teachers that in the coming lessons they will have complete answers

4.5 List of lessons

#	Lesson title	Learning objective	Number of periods
1	Creating, Power Point Presentation	-Explain key terms	1
2	Organizing slides	Manipulate slides by using the different presentation options	1
3	Apply design themes and format background	Create a presentation, apply themes to slides and format background	3
4	Insert object in Presentation	Insert common objects in slides	3
5	Applying animation and transitions in a presentation	Apply different animations and transitions to slides into created presentation	2
6	Assessment		1

LESSON 1: Creating Powerpoint presentation

a) Learning objectives

Create a powerpoint presentation

b) Teaching resources:

Computer laboratory containing at least one computer for each learner., Projector, internet, textbooks and internet connectivity to facilitate the research

c) Prerequisites

Students are now familiar with programs installed in computers as they learnt Unit 6 in senior 3 on presentation; they can therefore apply the same reasoning in using PowerPoint.

d) Learning activities:

Guidance:

- Under the guidance of the teacher, students open PowerPoint
- The teacher demonstrates how, inserting slides, copying slides
- The teacher instructs learners to create a PowerPoint presentation
- The teacher moves to help learners in their writing of the presentation
- Learners present some of their presentations
- Teacher gives guidance on how to do application activity

Answers to Activity 4.1

Answer 1: students give answer to the question but the following elements should be in the answer:

Content of the presentation:

- Use the slide master feature to create a consistent and simple design template. It is fine to vary the content presentation (bulleted list, two-column text, text and image, etc.), but be consistent with other elements such as font, colors and background.
- Simplify and limit the number of words on each screen. Use key phrases and include only essential information.
- Limit punctuation and avoid putting words in all-capital letters. Empty space on the slide will enhance readability.
- Use contrasting colors for text and background. Light text on a dark background is best. Patterned backgrounds can reduce readability.
- Avoid the use of flashy transitions such as text fly-ins. These features may seem impressive at first but are distracting and get old quickly.
- Overuse of special effects such as animation and sounds may make the presentation "cutesy" and could negatively affect the credibility.
- Use good-quality images that reinforce and complement the message. Ensure that the image maintains its impact and resolution when projected on a larger screen.
- Limit the number of slides. Presenters who constantly "flip" to the next slide are likely to lose their audience. A good rule of thumb is one slide per minute.
- Learn to navigate the presentation in a nonlinear fashion. PowerPoint allows the presenter to jump ahead or back without having to page through all the interim slides.
- Know how to and practice moving forward *and* backward within the presentation. Audiences often ask to see a previous screen again.
- If possible, view the slides on the screen that will be using for the presentation. Make sure the slides are readable from the back row seats. Text and

graphic images should be large enough to read but not so large as to appear "loud."

- Have a Plan B in the event of technical difficulties Remember that transparencies and handouts will not show animation or other special effects.
- Practice with someone who has never seen the presentation. Ask them for honest feedback about colors, content and any effects or graphic images that are you've included.
- Do not read from the slides. The content of slides is for the audience, not for the presenter.
- Do not speak to slides. Many presenters face their presentation onscreen rather than their audience.
- Do not apologize for anything in presentation. If something could will be hard to read or understand, don't use it.

Answer 2: Definitions

Presentation software is a program used to create slide shows for presentation on screen to an audience. Presentation program/software can supplement or at times can replace use of visual aids like handouts, chalkboards, posters, etc.

Microsoft PowerPoint: is a presentation software that allows ~~you~~ to create dynamic slide presentations. Slideshows can include animation, narration, images, videos, and much more.

A slide is a single page of information in a presentation created with a program such as PowerPoint. A presentation is composed of several slides.

Answer 3 :

Assess if the following have been done

- a) A new document has been created.
- b) Presentation of the first slide with given title and content
- c) Insert the new slide and write the content needed on it
- d) Save the presentation

All steps flow to perform this activity are available in student book (unit 4: Creating a PowerPoint presentation)

e)

e) Answer to Application activities 4.1

Students create a presentation on the 6 topics they are given also present their topics to their colleagues using a projector.

All steps flow to perform this active are available in student book (unit 4: Creating a PowerPoint presentation)

LESSON 2: Organizing slides

a) Learning objectives

Manipulate slides by using the different presentation options

b) Teaching resources:

For this lesson to be properly conducted every student should have a computer for practice. There is also a need for a projector to be used by the teacher for demonstration, textbooks and internet connectivity for research.

c) Prerequisites

Students are now familiar with Microsoft Office programs installed in computers. As they learnt Unit 6 in senior 3 on presentation. They can apply knowledge acquired to this lesson to be learnt.

d) Learning activities:

Guidance:

Under the guidance of the teacher, students in pairs create a PowerPoint presentation on the information are given

- After observing the demonstration of the teacher; students practice hiding, moving, rearranging, deleting and dividing slides into sections using the presentations they created.
- Teacher walks around and sees if students are practicing as per the example
- given and provide support to the needy students.
- A few pair of students show the presentation to the rest of class
- Teacher shows students how they arrange the slides in the presentation
- Teacher gives instructions on how to do the Application activity 4.2

Answers to Activity 4.2

Students open the "Nature-protect" presentation. And apply the available steps in content of organizing slide to do what are instructed or teacher can provide other appropriate presentation for this activity.

e)Answers of application activity 4.2

Steps to Create distinctive sections in the presentation are available in students' books. (Unit 4: organize slides content): Therefore; they create a presentation "Computer software" about Word processing software, Spreadsheets software, Presentation software and create in that presentation 3 sections

- In this case teacher can provide the suitable text to the students for each point

LESSON 3: Apply design themes and format back ground

a) Learning objectives

Create a presentation, apply themes to slides and format background to make it more attaractive

b) Teaching resources:

For this lesson, every student will have a computer for practice

Computer Lab, Projector, internet, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with Microsoft Office programs installed in computers. They learnt Unit 6 in senior 3 on presentation; they can therefore apply the acquired knowledge in learning this lesson

d) Learning activities

Guidance:
- The teacher shows to students a PowerPoint presentation having all the features to learn

- Methodically and step by step students under the guidance of the teacher discover how to insert the features like the ones in the teacher's presentation.
- Teacher moves among students to help those having difficulties in practicing the creation of the shown features
- A few pairs of students show the presentation to the rest of the class
- Teacher gives instructions to do the Application activity 4.3

Answers for activity 4.3

Tips used to make effective and more attractive PowerPoint presentations are shown in the student book in the section "Apply Design themes and format background"

e) Answers of application activity 4.3

Students create presentation "Understanding Gender Equality". All steps to apply themes, change background and adding a section to the existing presentation are available in the students' book. (Apply design themes and format back ground content in unit 4)

LESSON 4: Inserting objects in presentation

a) Learning objectives

Insert common objects in slides.

b) Teaching resources:

For this lesson, every student will need a computer. There will also be a need of a projector to facilitate demonstration by the teacher and books & internet connectivity to facilitate research.

c) Prerequisites

Learners are familiar with PowerPoint presentation learnt in Senior 3 and have learned some lessons in this unit which can serve as prerequisites to the new lesson.

d) Learning activities:

Guidance:

- The teacher shows a PowerPoint presentation containing all objects and
- The teacher asks questions related to the observed slides. They identify that the observed slides have objects inserted
- The teacher instructs students to do the same and moves to help those having difficulties
- Under the guidance of the teacher, students do the activity 4.4.

Answers for activity 4.4
- Answer1: picture, table SmartArt shapes audio, video etc. are the objects that can be inserted in presentation
- Answer 2: Benefits of using multimedia in presentation are: providing more details or explanation to the content, helping the audience to understand more about the presentation, giving good appearance and more attraction to the presentation

e) Answers of application activity 4.4

Students create the new presentation about the school description.They improve the presentation as instructed in the question by using the steps shown in the student's book. Unit 4 content of inserting objects in presentation.

LESSON 5. Applying animation and transitions in a presentation

a) Learning objectives

Apply different animation and transitions to slides into created presentation

b) Teaching resources:

For this lesson there will be a need for computers (a computer for each learner), a projector to facilitate demonstrations by the teacher, textbooks and internet connectivity to facilitate research

c) Prerequisites

Students are now familiar with PowerPoint as they learnt it in Ordinary level and in some lessons learnt in this unit. This knowledge can serve as a prerequisite.

d) Learning activities

Guidance:

- Teacher plays a slideshow of a presentation having slides transitions
- Students discuss what they saw in the presentation and the importance those new features may have in improving the qualities of a presentation
- The teacher shows the different slide transitions and how to use them
- Students practice using the different slide transitions and make a presentation on "Saving culture" as asked in activity 4.5
- Teacher walks around and sees if learners are doing the exercises properly and provides help where needed
- Some students show the presentation to the rest of class
- Teacher gives instructions to do the Application activity 4.5

Answers for activity 4.5

Answer 1:Animations are presentation features that give motion or life to text or object in the slide show. Animation effect can be added to text or graphics objects and if well applied, can excitement and increase the audience ability to understand the message.
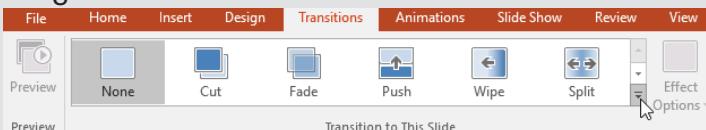
Slide transitions: are the effects that occur when the presentation you move from one slide to the next during a presentation

Answer 2:

Image A: Animation

Image B: transition

Students create a PowerPoint presentation on "Education for all" "Taxation in Rwanda". They use the steps shown in the students' book or do their own discoveries in order to change the font, change the animation,

Assess if the following have been done:

1. Text formatting required
2. Slides animation
3. Title and corresponds sound
4. Applying the media clips
5. Transition duration
6. To apply to all slides
7. Save presentation

4.6. Skills lab 3

For this lab, students will be able to prepare a PowerPoint presentation for a business plan and present it to business partners

Guidance to the lab:

This skills lab will be carried out in class. For additional research like how a business plan is done, students may get information from teachers or other students.

Let students divide themselves in groups. They may use the same businesses as in the skills lab 2 and remain in the same groups as in that skills lab.

i) Build

- With questions and answers, students understand what they are going to do. They have to understand what is a business plan and its components
- Explain to students the quality of a good PowerPoint presentation and with them, set rules on norms of their presentations like the number of slides, character size, maximum length of one paragraph (bulleted line), etc

ii) Practice

▪ Let student prepare their presentations and provide guidance if needed

iii) Presentation

When students have finished doing their presentations, let them present them in front of the whole classroom. Other students may provide inputs on how the presentation can be made more beautiful and how all the necessary aspects of a business plan can be incorporated

iv) Conclusion

Let students make a summary on the following main points for a PowerPoint presentation for a business plan:

▪ Parts of a PowerPoint presentation (Introduction, body, conclusion)
▪ Size of a PowerPoint presentation, paragraph size and character size
▪ How to use a project
▪ How to present (quality of a good presenter)

▪ *4.8 End unit assessment*

Unit 4 is all practical, the skills and the results of the practicals are assessed by ensuring that learners follow the right steps given during demonstrations to use MS PowerPoint features tested on correctly.

4.9 Additional activities

4.9.1 Remedial activities

Question 1: Explain the meaning of the term presentation. Identify programs that you can use to generate attractive presentations.

Answer: A presentation is an organized message prepared for use to deliver information to a particular audience using a computer program. Programs you can use to generate presentation include: Microsoft PowerPoint, Open Office Impress, Kingsoft Presentations, etc

Question 2: Explain the role of creating a presentation.

Answer: The purpose of creating a presentation is to give information, create awareness, present strategies or to sell a product

Question 3: There are several objects you can insert in a presentation, identify some of them. Answer: Objects that can be inserted include; textbox, pictures or images, tables, charts, media clips, etc.

Question 4: Create a presentation of 3 slides on the above questions answers.

4.9.2. Consolidation activities

1. Create a presentation with 3 slides, and apply the following activities:

   a) Write Hello Audience in first slide
   b) In second slide, introduce your self
   c) Copy the third slide and make a presentation of 4slides.
   d) Create slide 5 of your picture
   e) Apply slide show
   f) Save your presentation as My presentation

2. Create a presentation on early marriage in Rwanda society. Your presentation must have 5 slides with animation in the last slide.

4.9.3. Extended activities

You are asked to prepare a presentation presenting the features of your school. The presentation must contain at least five images which present the most aspects of the accounting option. Those images can be, school image, accounting department, accounting library, administrative blocks, and computer lab room.

UNIT 5 ▶ DATABASE MANAGEMENT WITH ACCESS

5.1. Key unit competence :

Create and manipulate a simple database.

5.2. Prerequisite knowledge and skills :

Students are already familiar with office programs, their menu and their tools and how to use them, they will then find it easy to use the different menu and tools found on Microsoft Office Access.

Students have also dim understanding of what a database is as they visit different websites having an underlying database. They are aware of the managements of records at their schools which can help them easily understand the database concept.

5.3. Cross-cutting issues to be addressed :

Throughout every lesson, cross cutting issues have to be addressed. Addressing cross cutting issues makes a lesson not a standalone entity but something that is related to real issues in society. Here are how cross cutting issues are addressed:

- **Standardization culture:** While learning Access, students become aware that data from programs like Excel can be imported into Access like data from Access can be exported in Excel. This requires that there be a certain level of standardization which allows that each program can read content from the other.
- **Financial Education:** Is covered when students discuss the cost implication involved in designing a new database and the financial benefits of having a database system.
- **Gender education:** students must be aware that ICT is not a subject appropriate only for girls or boys. ICT topics especially those related to database design are appropriate for both sexes not for only boys.

5.4. Guidance on the introductory activity

- The teacher organizes students in groups of four in order to do the unit's introductory activity.
- The teacher asks students to do the introductory activity in their respective groups.
- The teacher moves around to see how students are working and provides guidance where it is needed.
- The teacher invites some groups to presents their findings to the class
- The teacher asks students to evaluate the findings.
- The teacher tells students that in the coming lessons they will have complete answers.

Answer of introductory activity

a) The tables for this new database are: CUSTOMER, ACCOUNT, DEPOSIT, WITHDRAW, LOANS

b) To keep information in a computer database has the following advantages:

1. No redundant of data

2. Data Consistency and Integrity:

3. Data Security which limits who has right to have access to data

4. Easy access to data: data is easily accessible through different mechanisms provided by the database like queries, reports

5. Easy recovery: Since database systems keeps

C) Microsoft office Access

5.5 List of lessons

	Lesson title	**Learning objectives**	**Number of periods**

1	Understanding database	Explain the benefits of using a data management system over Traditional File Processing System	1
2	Key terms used in database	Explain the different terms related to database management	2
3	Database design process	Explain the process for designing a database	1
4	Creating, saving, closing and opening a database	Manipulate a database by creating, saving, opening and closing it	2
5	Creation of table relationship	Establish database table relationship	2
6	Adding Data to a database (Data Entry)	Enter data in an Access database table in data sheet view or using created forms	2
7	Querying a Database in design view	Create queries in design view to respond to data requests	2
8	End unit assessment		1
Total number of periods			14

LESSON 1: Understanding database

a) Learning objectives

Explain the benefits of using a data management system over Traditional File Processing System

b) Teaching resources:

For this lesson to be effective students and students will need to have student books and computers with internet connectivity for doing research in order to understand different database concepts.

c) Prerequisites

Students already learnt Word, Excel and PowerPoint and are therefore familiar of how information is kept by using those Word, Excel and PowerPoint files and this can help them understand the database concepts. They also encountered different applications which have databases and this may help grasp the meaning easily.

d) Learning activity:

Guidance:

- This is the beginning of the whole unit on Database creation and manipulation. This lesson is preceded by an analysis of the introductory activity which is given as a homework then discussed as the new unit starts

- The lesson on "Understanding database" starts by giving answers to the question in the activity 5.1

- Under the guidance of the teacher, students explore how database approach came in place, what was the disadvantages of the old approach and the advantage of the new one.

- The teacher gives guidance on how to do the questions in the application activity 5.1

- The meaning of the term database can be got from the student's book. Students then give examples of databases that are used in their school environment or society.

> **Answers of activity 5.1**
>
> The meaning of the term database can be got from the student's book. Students then give examples of databases that are used in their school environment or society.

e) Application activity 5.1

LESSON 2: Key terms used in Database

a) Learning objectives

Explain the different terms related to database management

b) Teaching resources

For the effectiveness of the lesson, it is necessary to have student's book and computers with internet connectivity to facilitate research which is very necessary for understanding the database key terms

c) Prerequisites

Students have some understanding on database got from the first lesson of this unit and can apply it in learning easily this lesson.

d) Learning activity:

Guidance:

– The lesson starts with a quick presentation by students who have done a research as instructed by the activity 5.2

– Under the guidance of the teacher, students explain the different terms found in the database world

– The teacher displays an access tables and students identify its different parts (rows, columns) and their other nominations

Answers of activity 5.2

Explanation of the terms research can be got in the student book. Students do research to find advanced explanations. They also find other terms and explain them. Some of these terms can be found in the student's book in the section on "Key terms used in database".

e) Application Activity 5.2

LESSON 3: Database design process

a) Learning objectives

Explain the process for designing a database

b) Teaching resources:

Resources needed for this lesson are: student's book and computers with internet connectivity for doing additional research.

c) Prerequisites

Students are used to delivering lessons in primary classes, they know what it requires them from to have a lesson ready for delivery; they can therefore apply this reasoning in this new lesson.

d) Activity:

Guidance:

- Start the lesson by making group of 2students
- In groups, students start doing the activity 5.3
- In groups students discuss the scenario in activity 5.3, present their findings and the whole class discuss on the findings.
- With the guidance of the teacher the class discuss the steps for database design and brainstorm what is done in each step
- As students have now seen the steps of database design they evaluate their findings that they presented at the beginning of the lesson
- The teacher gives guidance on how to do the application activity 5.3

e) Application Activity 5.3

Answers: The questions of activity 5.3 can be answered by reading the content available in the student book.

LESSON 4: Creating, saving, closing and opening a database

a) Learning objectives

Manipulate a database by creating, saving, opening and closing it

b) Teaching resources

This lesson will require the existence of these materials: one computer for each student in the computer laboratory with Microsoft Office 2019 installed, projector for demonstrating examples, student book and internet connectivity for doing researches.

c) Prerequisites

Students already know how to open, save, and close Word, Excel and PowerPoint documents as they learned the related units in Ordinary level. As this is much the same in Access, they will find it easy to apply the same in this new lesson.

d) Activity: 4.5

Guidance:

– Under the guidance of the teacher, individually, students read and answer questions in the activity 5.4

– The teacher opens Access 2019 and try to show the different objects in it and explains their roles in an Access database

– The teacher demonstrates how to create a database in Design, how to open and close a database and students follow suit.

> **Answers of activity 5.4**
>
> 1. Using MS Access 2019, students create and name respectively: Foods StockIn and StockOut tables.
>
> 2. Each Students identifies a primary key for each table
>
> 3. Student discusses the importance of the primary key in each table. (all additional information is provided in student book)

e) Application Activity 5.4

> **Answers:**
>
> Using the steps of database creation as they have seen them in the lesson, students create an Access database and save it on the desktop
>
> In the created database "Payroll", students create two tables for "STAFF marks for and SALARY. Indicate the right primary key and define the right data type.

LESSON 5: Creation of table relationship

a) Learning objectives

Establish database table relationship

b) Teaching resources:

Teacher and students will need computers in the computer lab with Office 2019 installed, projector for demonstrating examples to the class, student's book and internet connectivity for doing more research.

c) Prerequisites

Students have seen tables in Word and Excel. They know that tables may be related by having columns that are much alike or completely the same. This may be built on in making them understand relationships in Access and why it is necessary.

d) Learning activity:

Guidance:
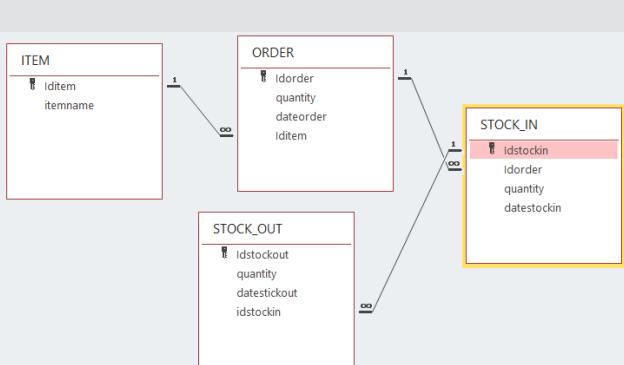
– This lesson is started by grouping students and making them search for the importance of establishing relationships in database tables.

– For each kind of table relationship, the teacher narrates a story on which he/she then ask questions in order to make students discover it

– By questions and answers, students give characteristics of each table relationship

– The teacher gives guidance on how to do application activity 5.5 in which students are going to create relationship of the tables.

> ### *Answers of activity 5.5*
>
> A relationship, in the context of databases, is a situation that exists between two relational database tables when one table has a foreign key that references the primary key of the other table.
>
> Relationships allow relational databases to split and store data in different tables, while linking disparate data items. For the rest of the answers to an activity can be found in the student's book, section 5.5.

e) Application Activity 5.5

LESSON 6: Adding Data to a database (data entry)

a) Learning objectives

Enter data in an Access database table in data sheet view or using created forms

b) Teaching resources:

Students will need computers in the computer lab with Office 2019 installed, projector for demonstrating examples to the class, student's book and internet connectivity for doing more research. There will also be a need of data on hard copy or excel data to be imported in Access.

c) Prerequisites

Students are familiar with entering data in other programs like word tables and Excel. They can apply their skills in entering data in an Access database.

d) Learning activity:

Guidance:

- The lesson starts with students doing the activity 5.6
- With the guidance of the teacher, students explain the terms like front end and backend
- Under the guidance of the teacher, students open the library database in datasheet view and enter data from a hard copy
- Under the guidance of the teacher, students create forms that they are going to use in entering data in the library database
- The teacher shows how to design a beautiful form for a database with logo, an interface for a database application
- The teacher gives guidance on how to do application activity 5.6

Answers of activity 5.6

1. Data entry is the process of inputting data or information into the computer using devices such as a keyboard, scanner, disk, and voice.

2. Answers for this question are available in student book.

3. The front-end refers to the user interface, while "back-end" means the server, application and database that work behind the scenes to deliver information to the user.

1.Students create a student registration form. All steps to create such form are available in student book.

LESSON 7: Querying a database in design view

a) Learning objectives

Create queries in design view to respond to data requests

b) Teaching resources:

For this lesson these materials will be needed: Computers with Microsoft Office 2019 installed, student book, projector and internet connectivity for conducting research

- Computers in the computer lab with Microsoft Office 2019 installed
- Senior 6 student's book
- Internet connectivity for researching how queries are designed
- Projector for demonstrations to students

c) Prerequisites

Students are familiar with searching for specific data in Excel by filtering, they can then apply it in querying an Access database.

d) Learning activity:

Guidance:
- Students brainstorm the meaning of queries and the role they play in a database
- Under the guidance of the teacher, students recall the tables that compose the school library database, the columns in those tables, the data types, the primary and foreign keys.
- The teacher demonstrates the steps to follow in order to build a query in design view
- The teacher creates a design view query to run on one table, students follow suit
- The teacher gives quick exercises of queries involving one table and students create and run those queries
- The teacher presents to students the scenario where they want to get data that can be got from more than one table and asks questions on how to get

the result

- The teacher demonstrates how to create and run queries involving many tables
- Quick exercises to create queries on many tables are given and students create queries and run them
- As students do exercises the teacher moves in the class to help those that may be having difficulties
- The teacher gives guidance on how to do application activity

Answers of activity 5.7

1. students create the table which can keep the given data using MS Access, students display all customers and their corresponding accounts numbers

e) Application Activity 5.7

The questions of activity 5.7 can be answered by reading the content available in the student book.

5.6 Additional information

For teaching the unit "Database Creation and Manipulation" Microsoft Office Access 2019 is used. This goes in line with other office programs which are taught from Year One to Year Two. It is not advised to use advanced office program and is forbidden to use older versions than Office 2019. When this is done, the accompanying student book will be of less help

Since learners are already familiar with computers and learnt Office programs from Senior One, it was not necessary to give all the details. For example, it was judged not necessary to explain how to copy and paste text, how to write using the keyboard, etc.

Most, if not all the lessons in this unit are taught using a computer and a projector so that the teacher demonstrates to students' examples that they will follow in going exercises.

5.7. Skills lab 4

For this skills lab, students will be able to Create and manage a database for a business

Guidance to the lab:

This skills lab will be done in class. Different groups will choose different projects (businesses) for which they will create databases. They may also choose other businesses in their environment and in this case some phases of building this database will be done outside the class.

i) Build

- With questions and answers, students understand what they are going to do. They have to understand the importance of a database for a business and the solutions that will be brought by that particular database
- By the guidance of the teacher, students review the database design process
- Students divide themselves in groups and identify database projects on which they will work

ii) Practice

- Students design a questionnaire that they will use to gather information on the business process of the institution (or company, or business) for which they want to build a database
- Using the information gathered Students identify the different tables that will constitute the database. Students build an entity relationship diagram showing table names, their fields, their primary keys and foreign keys
- Students build the database using computers. They make forms that will be used to enter data
- Students make any additional interface that will help the database users interact with that database and produce different reports.

iii) Presentation

- When students finish their database projects they present them to the class. The teacher may invite other teachers to appreciate the different projects and provide incentives to those with best projects
- While presenting, make sure students show how their database is built, the primary and foreign keys, the data validation applied on the tables. Students should also explain how they came up with their projects

iv) Conclusion

Let students summarize the database creation process and explain what is the importance of a computerized database for a business.

5.8. End unit assessment

Question 1. Answer:

The answers for questions 1 to 5 can be got by referring to the student book in the unit 5

6) The created table with their corresponding primary key, foreign key and data types are the following:

e) The name of the database can vary from student to student

1. MEDECINES Table

Field Name	Data Type
IDmedecine	AutoNumber
name	Short Text
Date_manifa	Date/Time
Expiring_date	Date/Time

2. STOCK Table

Field Name	Data Type
IDstock	AutoNumber
Iddelivery	Number
quantity	Number
date	Date/Time

3. STOCK_OUT Table

Field Name	Data Type
IDstockin	AutoNumber
Idstock	Number
quantity	Number
date	Date/Time
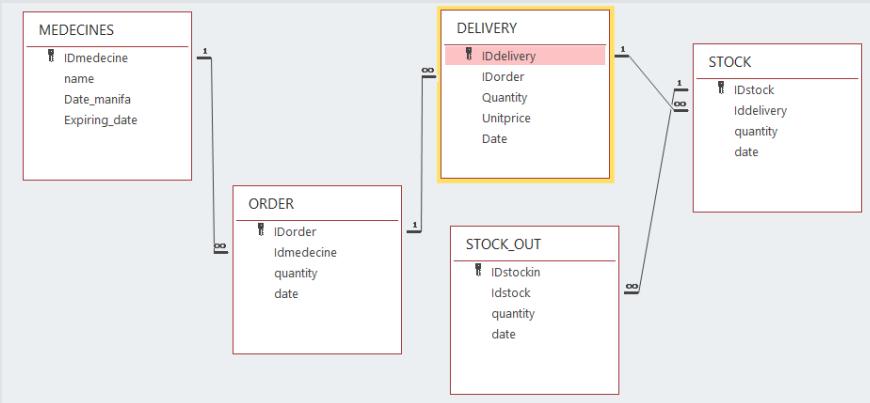
4. ORDER Table

Field Name	Data Type
IDorder	AutoNumber
Idmedecine	Number
quantity	Short Text
date	Date/Time

5. DELIVERY Table

Field Name	Data Type
IDdelivery	AutoNumber
IDorder	Number
Quantity	Number
Unitprice	Currency
Date	Date/Time

c) Relationships between tables

d) Form to record drugs

MEDECINES1

IDmedecine	3
name	parastamol
Date_manifa	4/6/2022
Expiring_date	2/15/2024

e)e)

Form to record orders:

ORDER

IDorder	1
Idmedecine	2
quantity	100
date	4/13/2022

e) Students write different querries to display different drugs.

5.9 Additional activities

5.9.1 Remedial Activity

1. Define the following terms:

– Database

Answer: A database is an organized collection of related data so that its contents can easily be accessed, managed, and updated. It is considered to be organized because the data is stored in categories that are accessible in a logical manner.

– Data

Answer: Data are unprocessed raw facts that include text, number, images, audio, and video. The data are useless for decision-makers until they have been processed or refined in some manner.

– information

Answer: Information is data that has been processed, refined and then given in the format that is suitable for decision making or other organizational activities.

2. Give the disadvantages of using Traditional File Processing System

Answer

- **Separation and isolation of data:** as data is isolated in many files, it is not easy to have access to data.
- **Duplication of Data:** because of the decentralized management, data may be scattered on different computers and this has as consequences a misuse of storage space as data is repeatedly stored in different locations (This is known as Data Redundancy) and a loss of data integrity as data is stored in different locations and the different copies may be slightly different.
- **Wastage of storage space**: Duplication of data leads to wastage of storage space. If the storage space is wasted it will have a direct impact on cost. The cost will increase.
- **Loss of data integrity:** Data integrity means data consistency. Duplication of data can also lead to loss of data integrity; the data are no longer consistent.

▪ **Data dependence** : in traditional file processing, the structure of data files is embedded in the application programs, so any changes to the structure of a file may require changing all programs that access this file. Therefore, data dependence means the application program depends on the data. This means that if some modifications have to be made on data, then the application program has to be rewritten.

5.9.2. Consolidation Activity

1) Based on the cardinality, explain the different types of relationships that can exist between entities.

Answer

– **One to one (1:1)**

In a one to one relationship one record in one table can be related to only one other record in the other table.

– **One to many /many to one (1:M / M:1)**

A one-to-many relationship allows a single record in table A to be related to multiple records in table B but a record in table B can have only one matching record in

table A.

– **Many to many (M:M)**

Two tables have a many-to-many relationship when a single record in the first table can be related to one or more records in the second table and a single record in the second table can be related to one or more records in the first table.

2) What is the kind of relationship exist between these relations:

Husband to wife, 1-1

businessman to cars 1-M

Students to teacher

5.9.3.Extended Activity and answers

1. Explain the importance of Database normalization

Answer : It is very necessary to have a normalized database because when the database is not normalized it presents update, deletion and update anomalies. This kind of database also has redundancy problems.

2.Give the importance of Database

Answer

- A database enables to put data on the disposition of users for consulting or updating
- The database should manage the privileges granted to its users.
- A database can be local in one machine just used by one user or distributed in many machines accessible by many users through a network (sharing of data).

3.Consider the following table and answer the corresponding questions

EMPLOYEE							
EmpId	FullName	Designation	Salary	DoH	DoB	Country	City
101	KAREKEZI Ange	Accountant	240000	3/23/2003	1/13/1980	Rwanda	Huye
102	GANZA Kevin	Head-IT	320000	12/2/2010	7/22/1987	Uganda	Kampala
103	MUTONI Rehma	Customer Care	200000	6/24/2009	2/24/1983	Burundi	Bujumbura
105	NKUSI Anicet	Marketting Officer	310000	11/8/2006	3/3/1984	Burundi	Bujumbura
108	KARENZI Abdul	CEO	560000	12/29/2004	1/19/1982	Rwanda	KIGALI

i) Identify the composite attribute and give reason

ii) Identify the primary key

iii) Which attribute could have a NULL value? Why?

UNIT 6

ONLINE BUSINESS CORRESPONDENCE

6.1 Key unit competence

Use online means to carry out online business correspondence

6.2.Prerequisite

Students learned the ICT subject from Senior One. They are therefore familiar with office programs, their menu and their tools and how to use them, they will then find it easy to use the different menu and tools found in email programs.

Students have knowledge of grammar and letter writing which they will apply in online communication topics.

6.3.Cross-cutting issues to be addressed

Cross cutting issues will be addressed throughout every lesson. Addressing cross cutting issues makes a lesson not a standalone entity but something that is related to real issues in society. Here are how cross cutting issues are addressed:

- **Standardization culture:** While learning Access, students become aware that data from programs like Excel can be imported into Access like data from Access can be exported in Excel. This requires that there be a certain level of standardization which allows that each program can read content from the other.

- **Financial Education:** Is covered when students discuss the cost implication involved in designing a new database and the financial benefits of having a database system.

- **Gender education:** Students must be aware that ICT in Accounting is not a subject appropriate only for girls or boys. ICT in Accounting topics especially those related to database design are appropriate for both sexes not for only boys.

- **Environment and sustainability:** Student develop the habit of well

keeping their environment by not throwing anywhere the out of use devices like ink cartridges, old computers and their spare parts.

6.4.Guidance on introductory activity

- The teacher tells learners to silently read the introductory activity and analyze it. After this the teacher chooses one student who then read for the whole class.
- The teacher asks questions in order to come up with answers to the questions which are in the introductory activity. As students give answers other learners comment on them and if some of the answers are wrong the teacher guides the process so that a right answer is got.
- Under the guidance of the teachers students brainstorm the importance of the new unit in their profession as accountants.

Answer of introductory activity

1) The business of Mugenzi is hindered in the sense that he spends much time and money for travelling while these should be used for other more productive activities

2) The price of airfare will be calculated by taking the round trip tickets multiplied by the number of flights (50 times). Students realize how these trips are expensive.

3) Mugenzi would reduce the number of days spent in china by buying goods online using ecommerce platforms

6.5.List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Emails	Create Gmail accounts using internet browsers	2
2	Sending and receiving email	Send, receive emails and their attachments using Gmail accounts	2
3	Search engines	Search accurately for information on the internet using search engines	2

4	Online sales and purchase process	Apply online purchase and sale process steps in online business correspondence	3
5	E-commerce	Explain the importance of online business and how to use them	1
6	E-procurement, E-tax and E-payment	Explain the importance of E procurement, E-tax and E-payment	1
7	Assessment		1
Total number of periods			12

Lesson 1: Emails

a) Learning objective

Create Gmail accounts using internet browsers

b) Teaching resources

For this lesson to be well conduct, the following resources need to be available:

– Computers with internet connectivity to allow email accounts creation

– Textbooks with the content about email creation

– Projector to show to students the process to create an email

– The student book or any other textbooks on emails

c) Prerequisites

Students have been learning ICT from Senior One. They are therefore familiar with Office programs and have basic skills on yahoo emails learned in Senior One. These skills will facilitate the learning of this new lesson. Students also know how to enter a URL address in a browser's address bar and the transfer of this knowledge will help in accessing the Gmail URL.

d) Learning activities

Guidance

- The teacher introduces the lesson by asking question related to the traditional post office by focusing on its disadvantages
- Students brainstorm how the disadvantage of the post office can be solved and state which communication means helped solve them
- Students play the place of business owners and state how emails can help them improve their business. Example: How a hotel owner can have his business prosper by using emails?
- With questions and answers students explore the content of the lesson. They will come to explain the terms like email and understand the email format
- Using a projector and with the active participation of learners students explore how to create a Gmail account.

Answers to activity 6.1

1) Generally sending and receiving mails at post offices operate this way:
   - The mail sender puts his/her mail in an envelope and writes the recipient's address on it. The mail sender pays for mail sending price and a stamp is put in the envelope
   - The mail envelope is put in the mail collector.
   - In the mail collector, the mail envelopes are sorted depending on their destination
   - Mail envelopes are then transported to their destination by air, sea, car depending on how far is the destination
   - At the destination the envelope is dropped to the box of the receiver

   - The receiver opens her/his box, takes the mail envelope.

2) a. A person can send and receive an email using a computer by first opening an email service provider (examples: gmail.com, yahoo.com) program whose URL address is entered in the browser's address bar. In the window that will appear, the email sender will specify his/her email and password to login. The email sender will click on **Compose,** then specify the receiver's address and the addresses to receive copies**.** He/she will then write the email, upload the attachment (if any) and click on the **SEND** button

b. Two examples of email service providers are: Outlook, yahoo

3) Answers on how emails may improve the works are varied but they should include the following:Emails will facilitate delivery of emails as they are fast and can be sent any time anywhere. They can also be sent to many people at the same time. All this will save time and resources.

e) Answers to application activity 6.1

1)The email can be greated using gmail. The steps on how to create an email are detailed in section "6.1.2. Creation of emails". The email created should contain the owner's name, it should for example be *nicmugabo@gmail.com* if the owner is Mugabo Nicolas.

2) The search of "effects of the emails on global economy" is done using search engines like google.com. The results found must be developed in bullets which are then explained:

3) The parts in the email address *murwanashyaka@gmail.com* are:

– Murwanashyaka: username

– @ (at sign)

– Gmail: hostcomputer:

– .(dot)

– com: domain name

Lesson 2: Sending and receiving email

a) Learning objective

Send, receive emails and their attachments using Gmail accounts

b) Teaching resources

Teachers or students will need these resources for a better course of the lesson:

– Image of someone sending an email using a computer and another posting a letter at the post office. These images will be used to introduce the lesson.

– Computer with internet connectivity which will be used to create emails

- Wall charts if available. These wall charts will show the different parts of a Gmail window environment
- Projector to help in displaying the steps to all students
- The student book or any other textbooks on using emails

c) Prerequisites and introduction

- Students know how to create emails and this will facilitate learning this new lesson
- The lesson will be introduced basing on the previous lesson (Email)

d) Learning activities

Guidance

- The teacher will show images of two people, one sending email using a computer and another putting a letter in the box at the post office. If no images are available, the teacher will just ask questions aimed at making learners discover the two methods of sending and receiving mails.
- The teacher shows a chart showing the different parts of a Gmail window environment showing the different parts which are also in the student book in the section "6.2. Sending and receiving email"
- With questions, the teacher will make students discover the procedure to go through in order to have access to the email. What student state is done on their computers and on the teacher's computer which is connected to a projector for displaying the screens
- Students practice sending and receiving emails. By questions and answers students summarize the steps of sending and receiving emails.
- Student send each other emails with or without attachments.
- For all this procedure, the teacher checks if every student is not left behind and helps those that may be facing difficulties

Answers to activity 6.2

1) The method being used in image A to send or receive a mail is: email (Gmail)

The method being used in image B is: Post Office

2) The email method is more efficient as it is more flexible meaning that an email can be sent anywhere, anytime and is promptly received. This method is also less expensive.

3) The process to withdraw mails as shown in image B that the user goes to the post office and opens his box in which he/she finds mails sent to him/her. In this system every box is identified by its unique number. For example, the mail box for REB is 3817 (P.O. BOX 3817).

4) After learning the lesson, students discover that sending a mail as shown in image A is done using email service provider accounts. For more details, look in the student book in the section on **"sending emails and attaching files"**

e)*Answers to application activity 6.2*

1) Students exchange emails. They know how to write, send and receive emails. This was learnt in the section on "sending and receiving email"

2) While writing an email **Cc** and **Bcc** stand respectively for **Carbon Copy** and **Blind Carbon Copy.** When the Blind copy option is used, the list of all the recipients is hidden from the other recipients of the mail which is the contrary when Cc tool is used.

3) The answer to this question and they don't need to be the same as the one provided here. 3 disadvantages that come with the use of emails are:
   - Some mail contains viruses and once opened the computer is infected
   - Emails may be hacked or users and all the information in it may be stolen

4)The advantages of email over traditional mail are:
   - The speed of delivery is high. Once the sender hit the send button the email immediately reaches the destination
   - There is no limitation in space and time. Emails can be sent aywhere provided they have internet access and anytime.
   - Email sending is free provided there is a computer and internet (these are used mainly for other purposes)

1)Students exchange emails. They know how to write, send and receive emails. This was learnt in the section on "sending and receiving email"

2)While writing an email Cc and Bcc stand respectively for Carbon Copy and Blind Carbon Copy. When the Blind copy option is used, the list of all the recipients is hidden from the other recipients of the mail which is the contrary when Cc tool is used.

3)The answer to this question and they don't need to be the same as the one provided here. 3 disadvantages that come with the use of emails are:

- Some mail contains viruses and once opened the computer is infected
- Emails may be hacked or users and all the information in it may be

- stolen

4)The advantages of email over traditional mail are:

- The speed of delivery is high. Once the sender hit the send button the email immediately reaches the destination
- There is no limitation in space and time. Emails can be sent aywhere provided they have internet access and anytime.
- Email sending is free provided there is a computer and internet (these are used mainly for other purposes)

Lesson 3: Search engine

a) Learning objective

Search accurately for information on the internet using search engines

b) Teaching resources

For this lesson to be carried out efficiently students or the teacher will need the following resources:

– Computers with internet connectivity to facilitate using search engines

– Projector to allow the displaying of the teacher's demonstrations

– The student book or any other textbooks on search engines

c) Prerequisites/Revision/Introduction

– Students know how to use web browsers and how to enter a URL in the address bar when they want to visit a website
– Students know how to write grammatically correct sentences. This skill will be used the search topic in the search engine

d) Learning activities

Guidance

– The teacher ask students to give examples of most used websites around the world. Among the ones given by students the teacher writes on the blackboard those that are search engines
– Under the guidance of the teacher, students visit one of the search engines they have given (google.com) and write the keyword Accounting. They get a screen looking like the one in Activity 6.3
– Referring to the screen they get, they answer the question of activity 6.3
– The teacher makes learners discover the lesson title by referring to the activity 6.3 they have done. If they don't find the right topic the teacher helps them.

Thereafter the lesson is conducted through questions and answers. For each search technic, students brainstorm the search results and analyze their accuracy.

Answers to activity 6

1)The student entered this topic: Accounting

2) The student doing the research found mixed content and did not find the information about balance sheet as he/she expected. The reason for not finding information about balance sheet is because the topic entered is too broad. The topic should be narrowed down to Balance Sheet or further narrowed down to get a few content which is much related to what the student wants.

3)After writing the topic Balance Sheet in Finance the student gets more accurate results because the topic is now more precise.

4) When the topic "Balance Sheet in Finance" is written inside quotation marks the results becomes more accurate.

5) The comparison of the results found is shown in the table below. The search was conducted on 25th March 2022. The number of results may change when the search is conducted another time.

Keyword entered	Number of search results	Which results are more accurate ?
balance sheet in Finance	1,290,000,000	Results are less accurate
"balance sheet in Finance"	99,300	Results are more accurate

Answers to application activity 6.3

1&2) For questions 1 and 2 student enter the given topics in the search engines search boxes. They try the techniques they learned to get more accurate results.

Lesson 4: Online sales and purchase process

a) Learning objective

Apply online purchase and sale process steps in online business correspondence

b) Teaching resources

For this lesson to be conducted the following resources are needed:
– Computers with internet connectivity
– Student Book or other textbooks whose content is about online sales and purchase process

c) Prerequisites

Students learned the purchase and sale process in different Accounting lesson. Now they are going to carry out this process using online means.

d) Learning activities

Guidance
– This lesson will be conducted mostly in a role play. One group of students will play the role of business owners and the other group will act as clients.

- Recall the steps of a sale and purchase process
- Under the guidance of the teacher students play the role of clients and business owners. They communicate among them using Emails to carry out each step.

Answers to activity 6.4

Students will explain how the concepts inquiry and quotation are applied in an online sales and purchase process. They use their own terms and it is not a problem if their answers are not perfect because this is a topic they have not yet learnt.

e) Answers to application activity 6.4

Students will explain how the concepts inquiry, quotation, order, invoice, goods delivery note are applied in an online sales and purchase process. Their answers should be more elaborate as this topic has already been seen in the lesson.

Lesson 5: E-commerce

a) Learning objective

Explain the importance of online business and how to use them

b) Teaching resources

- Computer with internet connectivity to facilitate research and access to some ecommerce platforms
- ICT in Accounting S4 textbooks or any other books containing topics related to Ecommerce
- Prerequisites/Revision/Introduction
- Students have already seen the lesson on Online Business Communication. The competences acquired in this lesson can be transferred to this new lesson
- Students have basic knowledge on ecommerce as they saw it in S2 in the section "2.2.1 E-Commerce"

c) Learning activities

Guidance

- The teacher introduces the lesson by making students do the activity 6.5. At

the end of this activity students, under the guidance of the teacher discover the lesson title

– By the help of questions and answers, students discover what is E-commerce and the meaning of the different E-commerce concepts

– Under the guidance of the teacher, learners visit some ecommerce platforms and discover their main features.

Answers to activity 6.5

1)The common name for the selling and buying business done online is E-commerce.

2)The process on how to buy goods on an e-commerce platform can be seen in the section on "E-commerce" found in the student book. Students use their own terms while giving answers to this question. They may not get right answers as they have not yet learnt this lesson.

3)Students give other local and global e-commerce platforms.

.Answers to application activity 6.5

1&2) For answers to questions 1 and 2 refer to the student book in the section "6.5. E-commerce"

3) E-payment methods that are used when buying goods and services online are: Credit/debit cards, mobile payments, E-wallet

4) Some of the benefits of e-commerce include:

- – It is faster as the buyer does not have to queu for a long time or travel to the market

- – As the e-commerce platform is available all the time, you can buy anytime

- – You can buy from anywhere provided there is internet connectivity and goods will be delivered to you

Lesson 6: E-procurement, E-tax and E-payment

a) Learning objective

Explain the importance of E procurement, E-tax and E-payment

b) Teaching resources

For this lesson to be conducted efficiently, the following resources are needed:

– Textbooks for Senior 4 or any other textbooks which may contain content related to E-procurement, E-tax and E-payment

– Computers with internet connectivity to facilitate research and access to some platforms which provide services related to e-procurement, e-tax and e-payment

– Projector to allow the displaying of screens for different e-procurement, e-tax and e-payment platforms

c) Prerequisites

– Students are familiar with using the internet and accessing different websites. They will find it easy to visit different e-procurement, e-tax and E-payment platforms

– Students are familiar with the terms procurement, tax and payment as they learned them in accounting related subjects

d) Learning activities

Guidance

– The lesson is introduced by doing the activity 6.6. The teacher guides learners in this activity.

– Under the guidance of the teacher, learners visit some e-procurement, e-tax and e-payment platforms and discover their main features.

Answers to activity 6.6

1)Students do a research and find out how procurement, tax collection and fee payment was done in Rwanda in the years 1980. They discover that there was no computerized system to manage that. Therefor there are disadvantages related to doing things manually.

2)Nowadays procurement, collection of taxes and fee payment is done using computerized systems. Briefly students explain how this is done.

e) Answers to application activity 6.6

1) Students enumerate the features found in the E-procurement system (umucyo.gov.rw).

2) Students describe one can do using e-tax application (RRA application) and its advantages.

3) Students give examples of services paid using E-payment methods and which and which types of payments allowed for each service.

6.6.Additional information for teachers

For a teacher to effectively deliver the lessons in the unit "Online Business Correspondence" he/she needs to do an extensive search both on the internet or hard copy textbooks where they are available. Students have basic knowledge of some lessons as they learned basic content in lower secondary. Those lessons for which learners have prerequisites are: Emails, Sending and Receiving emails and search engines. For these lessons the teacher will conduct the lesson taking into account of the students' prerequisites. Some other lessons are linked to other Accounting subjects like online purchase and sale process. For these lessons you may make sure that student remember the related concepts in the other subjects but without taking a lot of time.

Without contrasting the methodological guidance provided for each lesson, the teacher will try to start the lessons by making students do the questions in the corresponding activity. In this way learners will discover the new lesson.

6.7.End unit assessment

1)   Examples of services paid electronically in Rwanda are: Paying water and electricity, paying for TV subscription, paying for motorcycle ride, etc

2)   The difference between credit card and debit card is that with a debit card, the funds for the amount of your purchase are immediately taken from your checking account while for a credit card, the amount will be charged to your line of credit, meaning that the bill will be paid later.

3)   There are different techniques used to get accurate search results while using a search engine. Those techniques can be found in the section on

"Search engines" in the student book.

4) The advantages of using emails can be seen in the section on "Creation of emails".

5) The difference between the options Cc and BCc provided by emails can be seen in the section on "Sending and receiving emails" in the student book.

6) The different e-commerce model are: Business to Business, Business to Consumer, Consumer to Consumer, Consumer to Business .Details on those models are in the student book in the section on "E-commerce".

6.8.Additional activities

6.8.1Remedial activities

1) Explain the following terms:
   a) Email   d) Password
   b) Ecommerce   e) Downloading
   c) Etax

Answers:
   a) Email: For the meaning of an email refer to the section "6.1.1. Understanding email" in the student book
   b) Ecommerce: refer to the section 6.5.1. Introduction to E-commerce in the student book
   c) Etax: It is the collection of taxes using electronic means which can be computers with appropriate applications or other devices with appropriate software installed.
   d) Password: It is a string of characters that allows people to have access to a computer system. Password go together with usernames to uniquely identify a system user.
   e) Downloading: It is getting file or folders from one computer system to another in this case it is from the internet to your local computer.

2) Give examples of services paid with MTN Mobile Money in Rwanda

Answer: With MTN Mobile Money you can pay for: TV subscription, goods from a supermarket, taxi moto service, etc

3) Which one among the following is not a valid email address?: *theoneste@gmail.fr*, yahoo.com, *amakuru2022@gmail.com*.

Answer: The invalid email addresses are theoneste@gmail.fr and yahoo.com
- count is hosted
- .(dot): This separates the domain from the other part of the e-mail ad

6.8.2Consolidation activities

1) By using the email *kaneza@yahoo.com* Explain the format of an email address

2)Discuss the use of NEAR keyword used when searching from the internet

3)Give the advantages of using emails

Answers:

1)The format of an email is the following: y using the email *kaneza@yahoo.com* Explain the format of an email address

Kaneza: this identifies the owner of the e-mail address

@: Separates the username from the rest of the address parts.

Yahoo: This is the name of the remote server on which the e-mail account is hosted

.(dot): This separates the domain from the other part of the e-mail address
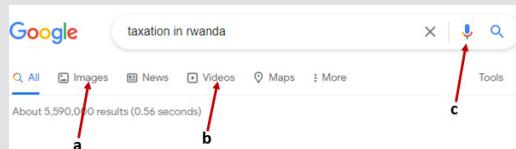
Com: This is a domain name which identifies the type of institution offering the services

2)The NEAR keyword allows to search for two or more search terms within a specified number of words from each other.

3)The advantages of using emails are discussed in the student book under the section "6.1.2.Creation of emails"

4)Discuss the importance of ecommerce in the economy of a country

5)Give the characteristics of strong email passwords.

6.8.3. Extended activities

Answers

1) Observe the search engine screenshot below and identify the use of the parts labelled a, b and c

2)Discuss the importance of ecommerce in the economy of a country

3) Give the characteristics of strong email passwords.

4) By doing a research on the internet, discuss the main ethical issues in ecommerce

5) Differentiate between a website and a web application

6)By doing a research on the internet search for notes that were used in Rwanda before 1980

Answers:

1) The use of the parts labelled a, b and c are:

    a) When this tab is clicked images related to the search topic are displayed.

    b) When this tab is clicked videos related to the search topic are displayed

    c) Clicking on this allows to activate the google voice search

2) The importance of e-commence in the economy of a country is not exhaustive. Students will develop ideas and they will get this from the internet or the student book in the section "6.5. E-commerce"

3) A strong password should:

At least have 8 characters

Contain numbers, lowercase and upper case letter,

Contain at least one special character.

4) Students do a research and give the ethical issues in ecommerce

5) A web application is a software or a program accessible through a web browser. These web applications have often a database. A website is a group of web pages having one name.

6) Students search the internet and get images of notes used in Rwanda before 1980.

UNIT 7 | INTRODUCTION TO WEB DESIGNING

7.1 Key unit competence

Create static websites using HTML

7.2. Prerequisite knowledge and skills:

Students should have knowledge and skills related to Internet concept, Search engines learnt in Senior 1, Unit 8: Network and internet fundamentals; URL and its parts (protocol, host name, domain name, sub domain) and Search on the internet learnt in Senior 4, Unit 6: ICT in Accounting learnt in Senior 4.

7.3. Cross-cutting issues to be addressed :

Throughout every lesson, cross cutting issues must be addressed. Addressing cross cutting issues makes a lesson not to be an isolated entity but relate the lesson with the issues in real world. Here below are some cross-cutting issues to be addressed:

Financial Education: Students must be aware of cost related to website design and implementation while choosing web server to host a web site.

Peace and value education: Students must be aware of internet-based crimes like hacking and prevent accessing people's data without permission committed using computer on different websites. They must also use the photo of others with their permissions, if not this can cause conflict.

Standardization culture: Students must have the culture of not taking from and keeping pictures on their website that are against Rwandan culture.

Inclusive Education: All students (those with and with no disabilities) are involved in the same class during teaching and learning process.

Gender education: To be covered when both (girls and boys) are involved in all learning and application Activity in a class.

7.4. Guidance on the introductory activity

- This activity take place in the computer lab (where students can access the Internet) and each student must have a computer connected to the Internet where it is possible.
- The teacher instructs students to go to page where the introductory activity is in the textbook.
- The teacher organizes students into groups.
- Teacher lets students discuss about the photo observed
- The teacher asks students to do the introductory activity in their respective groups.
- The teacher moves around to see how students are working and provides guidance to needy groups
- The teacher invites representatives of groups to presents their findings
- Not spending much time, the teacher tells the students that in the fourteen coming lessons they will have complete answers.

Answer of introductory activity

1. Students analyzing the statements are given; then answer by True or False

Answer 1: all statements are True

2. Students answer with **Yes** or **No; if** the answer is **Yes** then

3. *Three names of websites are:*

   – *www.igihe.com*,

   – *www.reb.gov.rw*

   – *www.ejoheza.gov.rw* etc.

4. In order to delete information on the website it depends on the user privilege for the administrator, he/she will be able to delete the content because he/she has full privilege (Read, delete, update and other) and if he/she is a user (Naïve User) ~~you~~ he/she cannot delete the anything from the website. Note that the content cannot be deleted in the normal way by writing the website address in the browser.

5. Advantage of a website

   ▪ Reaching a wider audience
   ▪ Easy access to business information
   ▪ Publicity & advertising

6. Disadvantage of a website

   ▪ Crashes & uptime
   ▪ Difficultly reaching the right people
   ▪ Spam

7.5. List of lessons

No	Lesson title	Learning objectives	Number of periods
1	Introduction to web designing (Key terms)	Explain the basic terms to web design	1
2	Introduction to HTML	Explain what is HTML and its evolution.	1
3	HTML syntax and html page structure	Use HTML tags to create a static web page	2
4	Tags that identify and name documents/commun HTML tags	Identify and describe tags that identify and name documents	2

5	Organize web page contents using HTML tag	Apply different elements tags in Document	1
6	HTML frame and table tags	Identify and describe HTML tags that create frames and tables.	3
7	HTML forms	Identify and describe different form elements that create a form page.	1
8	Creation of links	Appreciate the use of <a> tag that creates an hyperlink	1
9	Back end vs Front end	Explain what is Front end and Back end in website design and development	1
10	End Unit assessment		1

LESSON 1: Understanding of basic concepts

a) Learning objectives

Explain the basic terms in web design

b. Teaching resources:
Computer lab, internet, textbooks to facilitate the research

c. Prerequisites

Students are now familiar with using different search engines and internet programs like web browsers. As they learnt in o'level, they can therefore apply the same reasoning in coming lessons.

d. Learning activity:

Guidance on activity 7.1
- Teacher organizes Students in groups in order to do activity.
- Students elect the group leader and secretary.
- Teacher lets the students in groups work independently on the activity.
- Teacher walks around and sees if students are doing activity in their respective

- Teacher organizes Students in groups in order to do activity.
- Students elect the group leader and secretary.
- Teacher lets the students in groups work independently on the activity.
- Teacher walks around and sees if students are doing activity in their respective groups.
- Students react on the finding/ answers from other groups.
- Teacher corrects false answers and continue the lesson

Answers of activity 7.1

1. Find the all answers in student text book, first lesson (Definitions of basic concepts/key terms)

2. For the difference between statistic and dynamic web pages refer to student book, first lesson (understanding of basic concepts)

e) Answers of activity 7.1

By the guidance of the teacher, students answer the question of application activity 8.1

1. Website and web application characteristics refers to student textbook.

2. Definition of web application (refers to textbook)

Example: Irembo application

3. Web application is more advantageous comparing to website.

Web application involves application program which performs various operation.

4. Difference between static web pages and dynamic page refers to student text book

5. It is easier to update dynamic web site comparing to static website because it is convenient for dynamic website to use a CMS (content Management System) web interface for managing content which will allow you to make changes easily.

6. It is very cheap to host static website in comparison with dynamic website as it

LESSON 2: Introduction and evolution of HTML

a) Learning objectives

Explain what is HTML and its evolution.

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students have already knowledge and skills about URL and its parts (protocol, host name, domain name, sub domain and search on the internet learnt in o level. They have also knowledge about website, web page, web application and static web page learnt in lesson 8.1.

d) Learning activity:

Guidance
- The teacher organizes students into groups.
- Teacher let students discuss questions of activity.
- The teacher moves around to see how students are working and provides guidance to needy groups
- Teacher invites 2 or 3 group representatives to present their findings to the rest of class.
- Teacher reacts on answers given by students.
- Based on the answers from students, teacher introduces the lesson.

> ### Answers of activity 7.2
>
> 1. a. WWW stands for World Wide Web
>
> b. HTML stands for Hypertext Markup Language
>
> 2. The World Wide Web is an internet-based system or platform that allows hypertext documents to be interconnected by hyperlinks.
>
> 3. HTML elements tell the browser how to display the content. Detailed accounts on the importance of HTML can be got by doing research
>
> 4. HTML evolution is discussed in student text book

e) Answers of application activity 7.2

By guidance of the teacher, students answer the question of application activity 8.2

1. **HTML** is not a programming language but can be thought of as a presentation language. Because it is used to instruct the browser on how to present text and multimedia content on the Web.

2. **Hypertext** is text displayed on a computer display or other electronic devices with references **(hyperlinks)** to other text that the reader can immediately access.

Hypertext can be defined as text that links to other information. By clicking on a link in a hypertext document, a user can quickly jump to different content. While hyperlink is a text, phrase or image that you click to go to another web page or a section within the current page or to another website.

3. **The particularities of XHTML over HTML4.01**

   - XHTML support mobile web application
   - The browser will make no assumptions and will allow you, your mistakes.
   - XHML allows to create the own self-descriptive tags, or language, that suits the application.

4. Discuss the advantages of HTML 5 comparing to the previous HTML versions.

HTML5 is the fifth revised and newest version of HTML standard offering new features that support multimedia content more effectively than the previous versions.

   - HTML5 supports majority of browsers.
   - HTML5 doctype is a short statement
   - HTML5 comes with Media elements and new input elements

LESSON 3: HTML Syntax and HTML Page Structure

a) Learning objectives

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students have now knowledge and skills about HTML. As they learnt in lesson2: Introduction and evolution of HTML, they can therefore apply the same reasoning on understanding HTML tag and its role.

d) Learning activity

Guidance
- Teacher organizes students in groups in order to do activity.
- Teacher walks around and sees if students are doing activity in their respective groups
- Teacher lets students discuss the syntax and the role of HTML tag.
- Teacher invites 2 or 3 group representatives to present their findings to the rest of class.
- Teacher reacts on answers given by students.
- Based on the answers from Students, teacher introduces the lesson.

Answer of activity 8.3

1. HTML tag is an element name surrounded by angle brackets that has following usage:
    - The <html> tag tells the browser that this is an HTML document.
    - The <html> tag represents the root of an HTML document.
    - The <html> tag is the container for all other HTML elements (except for the <!DOCTYPE> tag)

2. The syntax of an HTML tag is: <tag_name>content goes here...</tag_name>

3. The role of an HTML attribute

- An ***attribute*** is used to define the property or characteristics of an element inside the element's opening tag.
- Attributes provide additional information about HTML elements
- An attribute either modifies the default functionality of an element type or provides functionality to certain element types unable to function correctly without them.

e. Answers of application activity 7.3

1. HTML tag has this syntax:<tag_name>content goes here...</tag_name>

- <tag_name> is the first tag
- </tag_name> is the end tag
- The content is written inside between the two tags

2. Attributes define additional characteristics or properties of the element such as width and height of an image. Attributes are always specified in the start tag (or opening tag) and usually consists of name/value pairs like name="value". Attribute values should always be enclosed in quotation marks.

3. Given this HTML statement: <font color=" green "> Hello Rwanda Color is an attribute name Green is an attribute value

There Hello Rwanda will be displayed in green font color into a browser.

LESSON 4: Tags that identify and name documents

a) Learning objectives

- Identify and describe the html tags that identify and name documents

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with HTML tags and page structures learnt in previous lessons. Therefore, they can apply the same reasoning to create a web page

with tags that identify and name a document.

d) Learning activity:
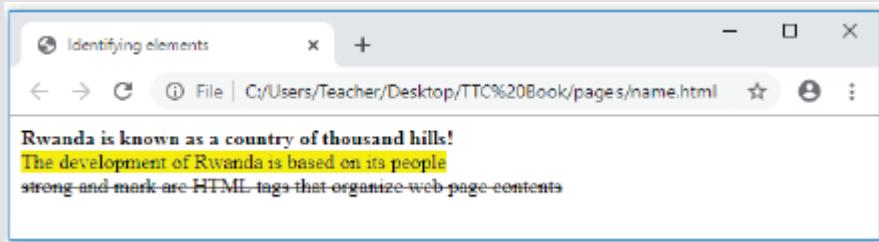
Guidance

- Teacher groups Students into small groups so that they share ideas on questions asked in activity 8.4
- Teacher walks around the group to guide the groups and to make sure every member is participating
- In their respective groups, the students, using internet they discuss on different steps followed when you create and execute a web page.
- Group representative has to present their finding on the asked questions to the rest of the class
- With answers from students, a teacher introduces a lesson.

> ### *Answers of activity 7.4*
>
> By guidance of the teacher, Students try to create and save the given HTML code and run it.
>
> 1. The output of given html code:
>
>
>
> 2. **The function of:**
>   - The **<strong>** tag is used to separate the text from the rest of the content. Browsers traditionally bold the text found within the <strong> tag.
>   - The <**mark**> **tag** is one of the HTML5 elements. It marks a part of the text **which** has relevance. It can be used to highlight text for showing emphasis.
>   - The <del> tag is used to identify text that has been deleted from a document but retained to show the history of modifications made to the document.
>
> 3. HTML tags for changing text color is <font> and the HTML tag for inserting a picture is <img> etc

Answers of application activity 7.4

```
<! DOCTYPE html>
<html>
<head>
<title>names</title>
</head>
<body>
<center>
<p><h1><font color=»Red»><mark>Institution Presentation:</mark></ font></h1></p>
<p> <h3>Rwanda Basic Education Board </h3></p>
<p> <h3>Vision</h3></p>
To promote the quality of education in basic, specialized and adult schools.
<p> <h3> Mission</h3></p>
To coordinate and fast track basic education programs and activities aimed at providing to all categories of Rwandans the quality education.
 <p><h1><font  color=»Red»><mark>Education  System:</mark></ font></h1></p>
<p> <h3> Primary School – 6 years </h3></p> </h1></p>
<p> <h3>Secondary School (Ordinary level) – 3 years</h3></p>
<p> <h3>Secondary School (Advanced level) – 3 years</h3></p>
<p> <h3> University Bachelor's degree – 4 years</h3></p>
<p><h1><font color=»Red»><mark>The following is Institution Logo:</mark></ font></font></h1></p>
<img src=»rebLogo.jpg» width =30% height=30% alt=»My own photo»>
</center>
</body>
</html>
```

e)Answers of application activity 7.4

The output:

2) a. **Color attribute** sets a font color of a text

b. **Size attribute** sets a font size of a text

3) The **src** in the <img> tag is an important attribute that specifies the location (source) or URL of the image you want to insert onto the page.

- The **alt** attribute specifies alternate text for an image, if the browser cannot display or locate the image.
- The **align** attribute is used to align an image on top, bottom, left or right of the browser window.

LESSON 5: Organize web page contents using HTML tags and hyperlinks

a) Learning objectives

Apply different elements tags in a document

b) Teaching resources:

Computer lab with internet, projector, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with HTML tags that identify and name documents learnt in lesson 5. Therefore, they can apply the same reasoning to create a web page with tags that organize web page contents especially creation of ordered and unordered list pages

d) Learning activity:

Guidance:

- Teacher groups students into small groups so that they share ideas on questions asked in activity 7.5
- Teacher walks around the group to guide the groups and to make sure every member is participating.
- In their respective groups, the students, using internet they discuss on different ways used while organizing an HTML web page content.
- Group representative has to present their finding on the asked questions to the rest of the class
- With answers from students, a teacher introduces a lesson.

Answers of activity 7.5

1.Students write code in HTML editor and save the given HTML code and run it.

Output of a given html code:

The web page content is organized in ordered list.

1.The list is defined as a definition list. A definition list is a list which present a glossary of terms, or other lists like dictionary and encyclopedia.

Below are codes to display the definition list

```
<!DOCTYPE html>
<html>
<head>
<title>Definition list </title>
</head>
<body>
<dl>
```

The HTML document below, displays unordered list of 4 items using square bullet types.

```
<! DOCTYPE html>
<html>
<head>
</head>
```
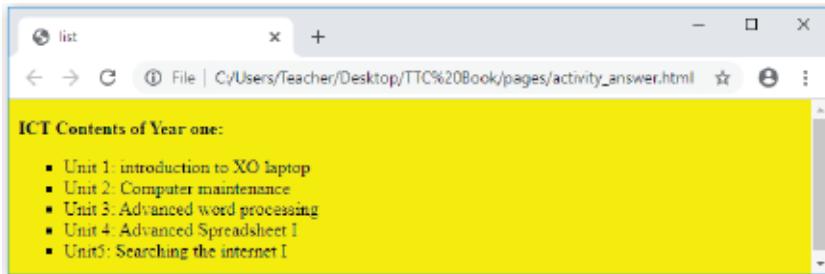
The HTML document below, displays unordered list of 4 items using square bullet types.

```
<! DOCTYPE html>
<html>
<head>
<title>list</title>
</head>
```

```
    <body bgcolor="yellow">
<p><Strong> ICT Contents of Year one:</strong></p>
<ul type="square">
<li>Unit 1: introduction to XO laptop </li>
<li>Unit 2: Computer maintenance </li>
<li>Unit 3: Advanced word processing </li>
<li>Unit 4: Advanced spreadsheet I </li>
<li>Unit5: Searching the internet I </li>
</ul>
</body>
```

</html>

This HTML code displays the following in a browser:

LESSON 6: HTML frame and table tags

a) Learning objectives

Identify and describe HTML tags that create frames and tables.

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with HTML tags that organize web page content the knowledge and skills about frames and table creation using HTML.

d) Learning activity:

Guidance:

– Teacher groups students into small groups so that they share ideas on questions of activity

– Teacher walks around the group to guide the groups and to make sure every member is participating.

– In their respective groups, the students discuss on answers of activity.

– Group representative has to present their finding on the asked questions to the rest of the class

– With answers from students, a teacher introduces a lesson.

Answers of activity 7.6

With teacher guidance, students find out answers of the activity:

Answer 1:

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset. The window is divided into frames in a similar way the tables are organized: into rows and columns.

Tables are used to organize data such as numbers, text, links and images into rows and columns. An intersection of a row and a column forms data cell in which table data is held. The HTML tables are created using the <table> tag in which the <tr> tag is used to create table rows and <td> tag is used to create data cells. The elements under <td> are regular and left aligned by default.

2. HTML tags that create a table:

```
<!DOCTYPE html>
<html>
<head>
<title> Table in HTML </title>
</head>
<body>
<table border="1">
```

```
    <tr>
   <th>Nothern Province</th>
   <th>East Province </th>
   <th>West Province</th>
   <th>South Province</th>
   </tr>
   <tr>
   <td>Musanze</td>
```

```
    <td>Bugesera</td>
   <td>Rubavu</td>
   <td>Nyanza</td>
   </tr>
   <tr>
   <td>Gicumbi</td>
   <td>Kirehe</td>
<td>Karongi</td>
<td>Ruhango</td>
   </tr>
   </table>
   </body>
</html>
```
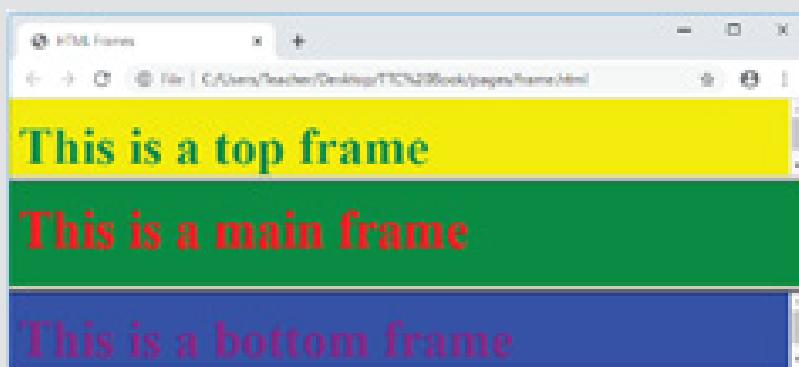
e. Answers of application activity 7.6

1. a) <Frameset> tag creates a group of frames to which web pages and media can be directed.

b) <caption>…</caption> used to create the table caption

c) Colspan attribute specifies the number of columns a cell should span.

d) <th> tag is used to create the table heading

2. Here below is an html document that creates web page with three frames:

```
<!DOCTYPE html>
<html>
<head>
<title>HTML Frames</title>
</head>
<frameset rows="30%,40%,30%">
<frame name="top" src="TOP.html" />
<frame name="main" src="MAIN.html" />
<frame name="bottom" src="BOTTOM.html" />
<noframes>
<body>
Your browser does not support frames. </body>
</noframes>
</frameset>
</html>
```

Its output is:

a) Learning objectives

Identify and describe different form elements that create a form page.

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with HTML tags that organize web page content into any type of a list as learnt in the last lessons. Therefore, they can develop quickly the knowledge and skills about form creation using HTML.

d) Learning activity:

Teacher groups students into small groups so that they share ideas on questions of activity

Teacher walks around the group to guide the groups and to make sure every member is participating.

In their respective groups, the students discuss on answers of activity.

Group representative has to present their finding on the asked questions to the rest of the class

With answers from students, the teacher introduces a lesson.

> *Answers of activity 7.7*
>
> With a guidance of a teacher, students answer questions of activity:
>
> The given page is a form web page

page

Please provide your registration details and click SEND button

Your first name:
Your second name:
Your nationality:
Your phone number:
Your Email:
Your password
SEND

1. An HTML form is a section of a document containing normal content, markup, special elements called controls (checkboxes, radio buttons, menus, etc.), and labels on those controls

2. Form, web form or HTML form on a web page allows a user to enter data that is sent to a server for processing. Forms can resemble paper or database forms because web users fill out the forms using checkboxes, radio buttons, or text fields.

e. Answers of application activity 7.7

1. a. Action attribute: The action attribute is used to specify the file on the server that receives data from the form for processing.

b. Method attribute: The Method attribute specifies how the data is to be sent to the web server. The method attribute specifies the HTTP method (GET or POST) to be used when submitting the forms

c. Textarea tag: Textarea control is a multi-line text input used when the user is required to give details that may be longer than a single sentence.

2. The syntax of Select or (Drop-Down List) form element

`<select name=" ">`

`<option value1=" " >...</option>`

....

`<option value=" ">...</option>`

`</select>`

3. Given the following form web page:

3. Given the following form web page:

Username: _____
Password: _____
Phone: _____
☑ Country Music
☐ Jazz Music
☐ Techno Music
☐ Rock Music
◉ Male
○ Female
[MCE ▼]
Comments: _____
[Send]

This web page is displayed by the following html document:

`<html>`

`</head>`

`<body >`

`<center>`

`<table><form Action= "login.php" Method= "get" >`

`<tr><td>Username:</td> <td><input type= "text" name= "FName" size="15"></`
`td></tr>`

`<tr><td>Password:</td>      <td><input      type=     "password"      name=`
`"pass" size="10"></`

`td></tr>`

`<tr><td>Phone:</td> <td> <input type= "text" name= "phone" size="13"></`
`td></tr>`

`<tr><td><input  type="checkbox"  name="music"  checked="checked"></td>`
`<td> Country Music</td></tr>`

```
 <tr><td><input type="checkbox" name="music" ></td> <td> Jazz Music</
td></ tr>

<tr><td><input type="checkbox" name="music" ></td> <td> Techno Music</
td></tr>

<tr><td><input type="checkbox" name="music" ></td> <td> Rock Music</
td></ tr>

<tr><td><input type="radio"name="sex" value="male"checked="checked" ></
td> <td> Male</td></tr>

<tr><td><input type="radio"name="sex" value="female"</td> <td> Female</
td>

<tr><td><select name=" dropdown"> <option value="MCE" selected>MCE</
option>

<option value="MPG">MPG</option>

<option value="PCB">PCB</option> </select> </td></tr>

<tr><td>Comments:</td><td><textarearows="3"cols="10"name="comment">

</textarea></td></tr>

<tr><td><input type="submit" name="submit" value="Send"></td></tr> </
form></table>

</center>

</body>

</html>
```

LESSON 8: Creation of links

a) Learning objective

Appreciate the use of<a>tag that creates a hyperlink

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with html tags that can create any web page Therefore, they can apply the same reasoning on creating linked web pages.

a) Learning activity:

Guidance

- Students in groups they discuss about questions of activity
- In their respective groups, the students discuss on answers of activity.
- Group representative has to present their finding on the asked questions to the rest of the class With answers from students, a teacher introduces a lesson.
- With answers from students, a teacher introduces a lesson

Answers of activity 7.8

1. A link is A hyperlink is a text, phrase or image that you click to go to another web page or a section within the current page or to another website.

2. Internal link

A local(internal) link (link to the same web site) is specified with a relative URL (without http://www....). While external links a web site to another ane.IT is specified with a relative URL.

e. Answers of application activity 7.8

1. Definitions of terms: hyperlink, hypertext and HREF attribute are found in a student text book lesson 12(Creation of links).

2. Refers student book to answer this question

3. The " image link" code means that word "image link" is a hyperlink and when it is clicked on the user is directed to the page photo.html

4. First.html page below is linked to second.html page:

First.html page
<! DOCTYPE html>
<html>
<head>
<title>linking page</title>

</head>

```
<body>
<p><font color="orange" size="20"> For getting more information about HTML 5,
Click following next link:
</font></p>
<a href="second.html"><b>Next</b></a>
</body>
</html>
```
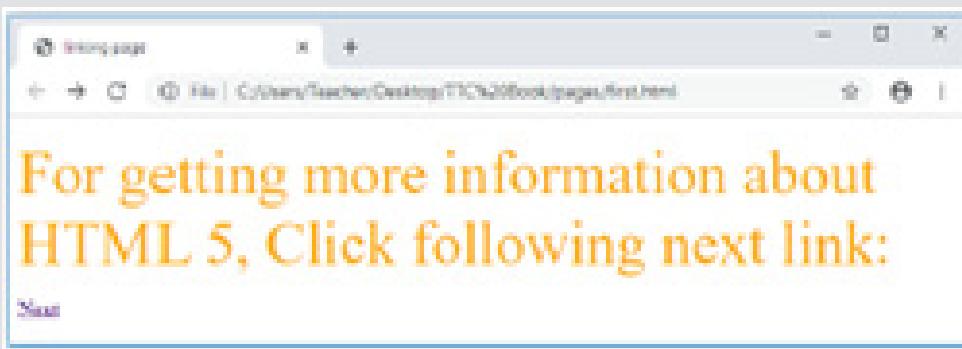
Second.html page:

```
<! DOCTYPE html>
<html>
<head>
<title>linking page</title>
</head>
<body>
<p><font color="orange" size="20"> INTRODUCTION TO HTML 5
</font></p>
<center><h4>HTML5 is the fifth revised and newest version of HTML standard
offering new features that support multimedia content more effectively than the
previous versions.
```

To be supported by majority of browsers, HTML5 has been developed in collaboration with browser makers.

This explains why most browsers are supporting the new HTML5 specification.

```
<h4></center>
</body>
</html>
```

LESSON 9: Back-end vs Front end

a) Learning objectives

Explain what is Front end and Back end in website design and development

b) Teaching resources:

Computer lab with internet, textbooks to facilitate the research

c) Prerequisites

Students are now familiar with basic html tags that can organize and create form elements found in Front end and students already have knowledge and skills about database (Back end) creation and management using MS Access. As they learnt Unit 4 in Senior 4 on; they can therefore apply the same reasoning in coming lessons.

d) Learning Activity:

Guidance

Teacher groups students into small groups in order to do the activity 7.9

Teacher walks around in the groups and guide the groups and to make sure every member is participating. In their respective groups, the students discuss on answers of activity 7.9. Group representative has to present their finding on the asked questions to the rest of the class. With answers from students, a teacher introduces a lesson.

Answers of activities 7.9

The difference between Front end and Back end in the web site design and development process in student text book.

e) Answers of application 7.9

Refers student book to answer this activity

7.6. Additional information

New HTML5 Elements

The new HTML5 elements may be classified into three categories namely: Structural, Input, and Media elements.

Structural elements: HTML5 offers new semantic elements used to define the structure of a web

page. Examples of structural elements include <article>, <aside>, <header>, <footer>, <main>, <section>, <summary> and <nav>

Input elements: New input types were introduced to address specific form input and formatting requirements for user input such as dates, numbers, and telephone numbers. Examples of new input types include color, date, datetime, time, email, number, tel, url

Media elements: Due to high demand of multimedia content on the web, WC3 introduced new set of media elements in HTML5 to handle different media types without need for additional plugins such as Adobe flash. New media elements include <embed>, <audio>, <source>, <track> and <video>.

Colors

One of the most important formatting features in web design and development has to do with the right application of color. Color can be applied to text (font) or the background of a section or entire page.

In HTML, color can be specified in either of three ways:

1. Using a valid color name as a value in a declaration e.g. "red", "blue"

2. Using a valid hexadecimal (HEX) value e.g. #ff1100, #BB00CC

3. Using the Red, Green, Blue (RGB) scheme e.g. "rgb(200,1,1)"

Example:
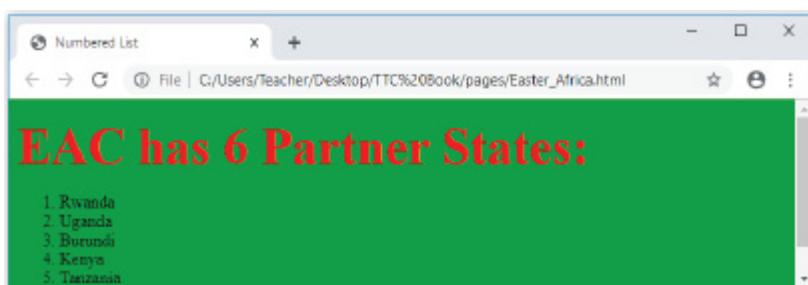
Let apply rgb color to set a background of a page. Consider the following HTML

Color	Name
	Red

Color	HEX
	#FF0000

Color	RGB
	rgb(255,0,0)

Let apply rgb color to set a background of a page. Consider the following HTML document:

```
<! DOCTYPE html>
<html>
<head>
<title>Numbered List</title>
</head>
<body bgcolor="rgb (195,45,203)">
<p><Strong><font color="red" size=72>
EAC has 6 Partner States:</font></strong></p>
<ol >
<li>Rwanda</li>
<li>Uganda</li>
<li>Burundi </li>
<li>Kenya</li>
<li>Tanzania</li>
<li>South Sudan</li>
</ol>
</body>
</html>
```

Output:

Today, large corporations, medium-sized, small -scale business, organizations and individuals are using websites and web applications to communicate company information, manage their projects and advertise their activities. People are now connected with their friends and family members on social media such as Facebook, Twitter, Instagram, YouTube and these social media technologies were developed using web design techniques. In this unit, we discussed HTML language used in designing website and web applications.

Below are the main concepts discussed in this unit:

A **website** is a collection of several web pages with information on a subject (documents that are accessed through the internet) that are connected together.

A **Web application (Web app)** is an application program that is stored on a remote server and delivered over the Internet through a browser interface.

A website can be static or dynamic. In this unit, we only discussed about the on static website. A static web site is site that is typically written in plain HTML and what is in the code of the page is what is displayed to the user and it does not use database. A dynamic webpage is one whose contents do change, and generally change very quickly and it uses database.

A static web page is made of different web pages. HTML page has the following structure:

<html>

<head>

Document header related tags

</head>

<body>

Document body related tags

</body>

</Html>

There different HTML tags that create different web pages:

- Tags that identify and name documents such as heading tags, image, formatting tags etc.
- Tags that organize web page contents such as:
- Ordered and Unordered list:<ol>and
- Definition and Nested lists<dl>
- nested lists: a list inside another type of a list
- Frame and Table tags :<frameset> and <table>
- HTML Forms: <form>

Nowadays, HTML5 is more useful comparing to other previous HTML versions because of its specifications:

- It offers new features that support multimedia contents
- It is designed to be supported by majority of browsers
- It comes with elements (media elements and new input types)

HTML pages are linked by **hyperlinks** for being called website .HTML link is created by anchor element<a>…. It has this syntax: **link text**

The website creation project involves these steps:

The exact process will vary slightly from designer to designer, but the basics are the same.

- The **front end** is the part of the website, users can see and interact with. It is developed using Visual Basic, HTML, etc programming languages
- The **back end** can also be referred to as the "**server side**" of a website. It can be built using different Relational Database Management Systems such as Microsoft Access, SQL Server, Oracle etc.

Advantages of a static web page and dynamic web page

Advantages of a static website

- Saves Time: Development of static websites saves time, because static websites are easy to develop.
- Money saving approach: Static websites are money saving, because such websites are cheaper to develop as compared to dynamic websites.
- Hosting: Static websites are easier to host, because static websites have fixed data.
- Indexing: Search engines such as Google, Bing etc., can easily index a static website.
- Fast Transfer: Static websites can be quickly transferred from server to client without much processing time.

Advantages of a Dynamic Website

- Simple to update: Dynamic websites are simpler to update. You don't need expert knowledge to make changes to a dynamic website.
- User-focused design: Dynamic websites are built by keeping users in minds. Users can make preferred changes to such websites.
- **Highly responsive:** Dynamic websites can be quickly updated to become responsive to different screen sizes.
- **Highly functional:** Dynamic websites are highly functional. Users can make many changes to dynamic websites.
- **SEO (Search Engine Optimization) friendly Design:** Dynamic websites are SEO-friendly.

A **Web application** (**Web app**) is an application program that is stored on a remote server and delivered over the internet through a browser interface. A

web application is a software or program which is accessible using any **web** browser.

Advantages of web Applications

Web applications are more popular because of the following reasons:
- Compared to desktop applications, web applications are easier to maintain as they use the same code in the entire applications.
- Web applications can be used on any platform: Windows, Linux, Mac as they all support modern browsers
- Released any time and in any form. No need to remind users to update their applications.
- They can be accessed 24 hours of the day and 365 days the year from any computer.
- A computer or a mobile device can be used to access the required data.

Disadvantages of web Applications
- Security is not guaranteed, so it is vulnerable for unauthorized access
- The web app may not support multiple browsers with equal precedence
- The web application is built explicitly for a certain operating system, so it is difficult to discover from the app store.
- Limited scope to access the device's features.

Below are the difference between web application and website:

Key differences between Statistic and Dynamic Web Pages

Parameter	Static web pages	Dynamic web pages
Technology languages used to create	HTML, JavaScript, CSS	CGI, AJAX, ASP, PERL, PHP, etc.
Task and complexity	Simple to construct	Complex to construct and design
Content to display	Display the same content each time when someone visits it.	Contents changes according to the user.
Loading speed	Loading quickly by consuming less time	Take more time while loading.

Updating content	Difficult to alter because it requires the change to be implemented at each point manually.	The contents can be changed regularly as the server generates unique content each time the page is loading with the same source code.
Database	No database is used	A database is used.

Conclusion

There is no involvement of application program in the static web page whereas dynamic web page involves an application program which can perform the various operations. Although, static and dynamic web pages have to return HTML contents to the web browser with the use of HTTP protocol, in order to interpret and display them on the browser.

A. Advantages of static websites

- **Faster speed:** Being a static file when a user visits a page, all the web server has to do is return a file. No server-side code is executed. Differently with dynamic websites there is extra processing time required to deliver HTML pages.

- **More secure:** Since there is no back-end server-side processing, there is less surface area for attacks and there is no database available to be compromised.

- **Lower cost:** As they don't have a database, static websites require less maintenance and are cheap to host.

- **Easier to scale:** When a website is hosted on the Cloud it is ready to be scaled at any time. Although similar techniques can be applied with dynamic websites, it will be more complex as database scaling might be required.

- **Backups/Full editorial history:** It is possible to see who changed which content and when if version control tools such as GIT are used.

B. Advantages of dynamic websites

- **Easier to update content:** Using a CMS (Content Management System) web interface for managing content will allow to make changes easily.

- **More flexible:** When creating a dynamic website, the programmer has full control of the wheel to create whatever interactive feature needed

7.7. Skills lab 5

For this activity, students will be able to create a website

Guidance to the lab:

This skills lab activity will be conducted in the class. Each student will choose a website project and develop it. Preferably the website to develop is for a business

i) Build

With the help of the teacher, students choose website projects to develop. Briefly students explain how those websites will look like and which kind of information they will contain.

ii) Practice
- Students develop a prototype of the website that they individually present to the teacher for comments and approval
- Students develop the website. For better websites students will have to do research and use more tags apart from those they learned
- They will host their website so that they can be available through the internet. If means are not available at least one best project will be hosted for the whole class or they can look for free hosting services.

iii) Presentation
- When projects are completed, students will present their website projects to the class. The teacher may invite other teachers to appreciate the different projects and provide incentives to those with best projects
- Students have to present the different features of their website. If there is a special feature that was not learned in class, students will show the HTML tags that were used to create it.
- As students finish their presentations, the teacher tells them that there are applications that may have a database and encourages them to continue their research and work by developing an interactive website.

iv)Conclusion

Students summarize the steps they went through and explain them. Students should understand the term prototype and web hosting

7.8.End unit assessment

1. Answer of this questions are referred to leson1: Definitions of basic concepts in student text book.

2. An **internet** is the network of computers and other communication devices connected together around the world, allowing information and resources to be shared globally while **web** is the common name for the World Wide Web, a subset of the internet consisting of the pages that can accessed by a web browser.

A **web** can be also defined as a system of internet servers that support specially formatted documents. The documents are formatted in a markup language called HTML (HyperText Markup Language) that supports links to other documents.**77**

3. A program, such as Mozilla Firefox that lets a user display HTML-developed web pages is referred to as a web browser.

4. Three key factors that a web developer should consider before developing a website
- Usability

One of the most important aspects of web designing is actually making the site usable for the average user. Most customers who visit your website are not professional HTML coders, so they might need things simplified a little bit (which is fine)

- Speed

Website speed can make or break your entire company. If the page does not load within three to five seconds, users will go mad. they will likely exit your web page and never return, causing you to lose out on their potential business.

- Content

Users are very picky. Even if your webpage is easily accessible, functions well, works quickly, and looks great, they still won't be pleased unless you have compelling and engaging content on your site. Content marketing plays a major role in any company's advertising campaign. People much prefer video content over written, which is why content video views have exceeded 50 billion views per month.

5. Three types of image formats that can be inserted into a web page:

a. **GIF** (Graphics Interchange Format): You can take advantage of the characteristics of lzw compression to improve its efficiency and thereby reduce the size of your gif graphics. The gif format allows you to pick colors from the color lookup table of the gif to be transparent.

b. **JPEG** (Joint Photographic Experts Group): The other graphic file format commonly used on the web to minimize graphics file sizes is the Joint Photographic Experts Group (jpeg) compression scheme. Unlike gif graphics, jpeg images are full-color images that dedicate at least 24 bits of memory to each pixel, resulting in images that can incorporate 16.8 million colors.

c. **PNG** (Portable Network Graphics): png graphics were designed specifically for use on web pages, and they offer a range of attractive features, including a full range of color depths, support for sophisticated image transparency, better interlacing, and automatic corrections for display monitor gamma. png supports full-color images and can be used for photographic images.

6. An HTML statement which demonstrates how to insert.

a. An image of a car:

<img src= "car.jpg" width= "250 px"height= "400px" alt= "car picture">

b. Page with four horizontal frames

<frameset rows="20%,20%,20%,20%" > ....</frameset>

c. Table of 5 rows and 8 columns

<table border="2" cellpadding="3" cellspacing="3" width="400"height="200">
<tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>
<td></td> <td></td>

/tr>

<tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>
<td></td> <td></td>

</tr>

<tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>
<td></td> <td></td>

</tr>

<tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>
<td></td> <td></td>

</tr>

```
<tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>
<td></td> <td></td>
</tr>
```

7&8&9) Answers of these questions are referred to in lesson 11: HTML forms.

10. Difference between hyperlink and hypertext is found in the student book lesson 13(Creation of links).

11. Three restrictions that were imposed by XHTML that have been relaxed in HTML5:

Attribute	Description
max	Specifies the maximum value for an input field
maxlength	Specifies the maximum number of character for an input Field
min	Specifies the minimum value for an input field
value	Specifies the default value for an input field

Examples:

<input type=" number" min=1 max=20>

<input type="text" maxlength=12>

7.9. Additional activities

7.9.1. Remedial activity

1) What is the use of colspan and rowspan attributes?

Answer:

The colspan attribute in HTML specifies the number of columns a cell should span. It allows the single table cell to span the width of more than one cell or column.

The rowspan attribute in HTML specifies the number of rows a cell should span. That is if a row spans two rows, it means it will take up the space of two rows in that table.

2) Write the syntax of setting a color a body background

Answer: <body bgcolor="value" **>**

Note that value should be a color name, color in hexadecimal format or RGB format.

7.9.2. Consolidation activity

1) Explain any two objects of an HTML form

2) Differentiate between definition list and nested list

For answering this question refer to the lesson 11: HTML forms in the studnt book.

7.9.3 Extended activity

Answer:

<! DOCTYPE html>

<html>

<head>

<title>Definition list </title>

```
</head>
<body>
<dl>
<dt><b>GIF </b></dt>
<dd>GIF stands for Graphics Interchange Format </dd>
<dt><b>PNG</b></dt>
<dd> PNG stands for Portable Network Graphics</dd>
```

7.9.3 Extended activity

Using HTML tags , create a web page that display the below table

SAVE PARENTS'SCHOOL ADMINISTRATION STAFF						
Employee's information						
RegNo	Firstname	Lastname	Phone	Age	Position	Salary
11	Jean Claude	UWIHANGANYE	0783297650	45	Head Teacher	400000Rwf
19	Diedonne	KAYIBANDA	0784298651	55	Head of Studies	300000Rwf
7	Pelagie	MUKANDORI	0784228661	51	Head of Discipline	250000Rwf
12	Dhalie	NIZEYIMANA	0780615775	35	Accountant	200000Rwf

the table above is created by the following HTML document:

<! DOCTYPE html>

<html>

<head>

<title>Table attributes </title>

</head>

<body>

<table border="2" cellpadding="2" cellspacing="2" width="600"height="100">

*<Caption> SAVE PARENTS'SCHOOL ADMINISTRATION STAFF</caption>
*

<tr>

<th colspan=7> Employee's information</th>

</tr>

<tr>

```
th>RegNo</th>
<th>Firstname</th>
<th>Lastname</th>
<th>Phone</th>
<th>Age</th>
<th>Position</th>
<th>Salary</th>
<tr>
<td>11</td>
<td>Jean Claude</td>
<td>UWIHANGANYE</td>
<td>0783297650</td>
<<td>45</td>
<td>Head Teacher</td>
<td>400000Rwf</td></tr>
<tr>
<td>19</td>

<td>Diedonne</td>
<td>KAYIBANDA</td>
<td>0784298651</td>
<td>55</td>
<td>Head of Studies</td>
<td>300000Rwf</td></tr>

<tr>65

<td>7</td>
<td>Pelagie</td>
<td>MUKANDORI</td>
<td>0784228661</td>
<td>51</td>
<td>Head of Discipline</td>
<td>250000Rwf</td></tr>
<tr>
<td>12</td>
<td>Dhalie</td>
<td>NIZEYIMANA</td>
<td>0780615775</td>
<td>35</td>
<td>Accountant</td>
<td>200000Rwf</td></tr>
</table>
</body>
 </html>
```

8 ICT TOOLS IN ACCOUNTING

8.1. Key unit competence

Describe the working mechanisms of different ICT tools in accounting

8.2. Prerequisite

– Students are familiar with computers which is the most common ICT tool. The skills they have in computers will facilitate acquisition of new competences related to ICT tools in Accounting

– In their daily life students go to banks where they see different tools used there. This can be considered as a basic prerequisite for learning this unit

– Students learned in Senior 2 a topic on "Financial Technologies in Society" this will facilitate their learning of this unit

8.3. Cross-cutting issues to be addressed:

As you conduct lessons, take into account different crosscutting issues to be addressed throughout the lessons. When crosscutting issues are addresses, a lesson is no longer a standalone entity but is now something which is related to real issues in society. Here are how cross cutting issues are addressed:

▪ **Environment and sustainability:** Students have to be aware that there are different ways of disposing off old ICT tools. They will then use those methods when it comes to disposing off their own old ICT tools.

▪ **Standardization culture:** While learning different lessons, students become aware that there most ICT tools have same parts like input, output and processing parts. They realize also that most tools have same ports so that they may interconnect to work together. This requires a certain level of standardization which allows that those tools can work together.

▪ **Financial Education:** Is covered when students discuss the benefits of using the ICT tools stated in the lesson or the unit compared to when those tools are not used.

- **Gender education:** Students must be aware that ICT in Accounting is not a subject appropriate only for girls or boys. ICT in Accounting topics especially those related to ICT tools are appropriate for both sexes not for only boys.

8.4 Guidance on introductory activity

- Students silently read the questions in the introductory activity and analyze it. After this the teacher chooses one student who then read for the whole class.
- Under the guidance of the teacher, students answer the questions in the introductory activity. As students give answers the teacher makes sure they are right ones and if not those answers are complemented by other students or by the teacher
- Under the guidance of the teachers students brainstorm the importance of ICT tools in acounting

8.5 List of lessons

#	Lesson title	Learning objectives	Number of periods
1	Counting machines	Explain the working of counting machines Explain the role of the different parts of a counting machine	2
2	Billing machines	Explain the working of billing machines	2
3	Note detector	Explain the working of note detectors	1
4	Automatic Teller Machine	Explain the working of an ATM and use it	1
5	Assessment		1
Total number of periods			7

Lesson 1: Counting machines

a) Learning objectives

- Explain the working of counting machines
- Explain the role of the different parts of a counting machine

b) Teaching resources

For this lesson to be effective, the following resources are needed:

– Charts or images of counting machines or real counting machines if they can be available

– The student book for Senior 4 or any other textbooks with the content about conting machines

– Computers with internet connectivity to facilitate research on counting machines.

c) Introduction

The introduction of the lesson is done using the questions in the activity 8.1. However some of the questions (question 2 and 3) cannot be answered. The teacher replace them with those that students can answer which will lead them to discovering the lesson title

d) Learning activities

Guidance

– The teacher introduces the lesson by making students do the activity 8.1. At the end of this activity students, under the guidance of the teacher discover the lesson title

– By questions and answers, students discover that there are different types of counters.

– Guided by the teacher, students discover the different types of counters, their parts and their roles

– If possible the teacher brings a counting machine and demonstrates how it works

1)The tools to be used in money counting are counting machines such as banknotes only counters,

2)The students explain how to use a counting machine, this information can be found in the student book in the section "71.Counting machines"

3)The parts of a counting machine are detailed in the student book in the section "Parts of a banknote counter"

Answers to application activity 8.1

1) For the definition of banknotes only counter, refer to the student book in the section "8.1. Banknotes only counters"

2)The parts of a banknote only counter are shown in the student book in the section 8.1. Banknotes only counter

3)Students do a research to come up with the internal parts of a banknote only counter

4)Students do a research to identify 5 different banknotes only counters and their specifications.

Lesson 2: Billing machines

a) Learning objective

Explain the working of billing machines

b) Teaching resources

For this lesson to be conducted effectively, the following resources are needed:
– An image or a chart of a billing machine
– A projector to be used to display the first interface of EBM Version 2

c) Introduction

The lesson is introduced by doing the activity 8.2. The teacher guides students so that they come up with answers which will lead them to discovering the

lesson title. The teacher may also narrate a scenario which can be used as an introduction to this lesson

d) Learning activities

Guidance

– The teacher narrates a scenario in which he shows that billing machines are needed

– With active participation of students, the teacher navigates the content of the lesson.

– The teacher makes students discover the advantages of using billing machines by using questions and answers.

Answers to activity 8.2

1) Supermarkets use billing machines to produce bills. There are various machines of this kind. A supermarket owner uses the one that will allow to achieve all the functionalities she/he wants.

2) The students will give the steps supermarket staff will go through in order to make a bill

3) On a bill there is information related to the seller (supermarket), information related to the client, information related to the goods bought and that related to the price to pay.

4) Students give the advantages of billing systems in a) stock management and b) paying taxes

Answers to application activity 8.2

1) Billing machines use the technology of thermal printing process. For details on this refer to the student book in the section "8.2.Billing machines".

2) A billing machine has three main parts which play 3 main roles namely inputting data (keyboard), processing data and outputting information (printer and screen)

3) EBM Version 2 is a software introduced by RRA which can be installed on computers and thereafter be used to print bills.

Lesson 3: Note detector

a) Learning objective

Explain the working of note detectors

b) Teaching resources

For this lesson to be effectively conducted the following resources are needed:
– The student book or any other book with the content about note detector
– An image or a note detector or a real note detector if it the teacher can get one.

c) Introduction

– The teacher creates a scenario in which he/she illustrates the need detecting fake notes
– Students say real stories they know of the cases where fake notes were found. If they can't, the teacher gives his/her examples
– Students discover that to prevent fake notes entering in money circulation they use note detectors

d) Learning activities

Guidance
– The teacher introduces the lesson by making learners do the activity 8.3 or he narrates a scenario which illustrates why fake notes detection is necessary
– With questions and answers, students discover the title of the new lesson
– The teacher explains the working principle of different note detectors but he/she makes sure students also participate in this. If possible, students are the ones who should explain those working mechanisms.

Answers to activity 8.3

1) If note detection is done manually, the following are the common features to check:

   – Watermark: Hold a note on a light to see a hidden image

   – Security thread: This is a thin ribbon that is threaded in the note's paper.

   – Intaglio printing: This is a kind of printing which makes raised lines which can be felt by touching the note

   – Etc

2) The bank will buy a note detector.

3) The advantages of using a bank detector is that you avoid getting fake money. Fake money is a loss and can cause problems to individuals if they receive the fake notes and are cought trying to use them in transactions.

e) Answers to application activity 8.3

1) Note detectors use one of the two methods: Ultraviolet light or Magnetic counterfeit bill detection. Students explain how these methods work by refering to the student book in the section "8.3. Note detector".

2) Students do research to identify the parts of a note detector.

Lesson 4: Automatic Teller Machine

a) Learning objective

Explain the working of an ATM and use it

b) Teaching resources

For this lesson to be efficiently conducted the following teaching and learning materials are needed:

– An image of an Automatic Teller Machine with its different parts

– The student book or any other book which has some content about ATM

– Projector to display a video on how ATM works

c) Introduction

– The teacher creates a scenario in which he/she illustrates the need for having an Automatic Teller Machine

– Students answer questions on the story heard. They discover that an ATM is the one that can be used to solve the problems stated in the teacher's story.

– Students discover the lesson title

d) Learning activities

Guidance

– Use a story or the activity 8.4 to introduce the lesson

– Show an image of an ATM and make students discover its parts and their names

– Make students explain how to use an ATM to withdraw or deposit money and make them outline the advantages of using an ATM

Answers to activity 8.4

1) Referring to their own experience, student explain how to withdraw or deposit money in a bank

2) A machine that can act as a bank teller is Automatic Teller Machine.

3) The process of withdrawing and depositing money can be found in the student book in the section "7.4. Automatic Teller machine"

Answers to application activity 7.4

1) Students do a research on the internet and identify the internal parts of an ATM

2) An ATM can be hacked. Students explore what this hacking can have as consequences.

8.6 Skills lab 6

For this lab, students will be able to use different ICT tools in accounting

Guidance to the lab:

This lab may be conducted in class by bringing in class the different ICT tools on which students are going to carry out their activities. It can also be conducted at

the places where those tools are found such as banks

i) Build

Before the lab activity start make sure there is a form that will be used to collect observations by students

- Using questions and answers make learners recall how to use the different ICT tools used in accounting.
- First make students discuss what they are going to do in the skills lab and make them write down what they will ask to the bank agent. In case this is to be done in the classroom, different students will act bank agents who will then answer the questions from other students.

ii) Practice

- Students ask questions using the questionnaire they prepared in advance. They will be in groups so that each group as their questions
- Each student should take notes on the findings of the interview.
- After the interview there is a demonstration of how the different ICT tools are operated. Thereafter students use also those tools
- Moderate the conversations and the practice to allow learners capture more experience from the bank agent.

iii) Presentation

Inform students when they will present their skills lab findings. They can use group presentations or any other method such as gallery work. During the presentations other students challenge the presenting team.

iv) Conclusion

The conclusion is going to be done by every student. The teacher will randomly select a student who says the point he/she has captured from the presentation and the whole skills lab activity. The main points given by students are written on the blackboard.

8.7 Additional information for teachers

It is good to teach this unit using the tools related to each unit namely counting machines, billing machines, note detector, Automatic Teller Machine. These tools are not easy to find but the teacher can use other alternatives available namely watching images or videos of those devices and visiting an institution where those devices can be found like banks.

8.8 End unit assessment

1) Students do research to identify the benefits of using IVT tools in Accounting.

2) The ICT tools seen throughout the unit are counting machines, billing machines, note detector and Automatic Teller Machines. Students describe those tools in their own terms by referring to the content in the student book in the corresponding titles.

3) There are different software used in accounting such as QuickBooks, Sage, Wave, Xero, FreshBooks, etc. Students describe those software.

8.9 Additional activities

8.9.1 Remedial activities

1) Define the following terms:
   a) Banknotes only counter
   b) coin sorter
   c) ATM

2) What are the three main parts of a computer. Identify those three parts on an ATM if possible

3) What is a billing machine?

Answers:

1)For the definitions in question 1 refer to the student book in the section "8.1.Counting machines" and "8.4 Automatic Teller Machine".

2)The three main parts of a computer are input, output and Central processing unit. On an ATM the input part is the keypad, the output is the screen and the central processing unit is the circuitry of the ATM which are housed inside its case.

3)For the definition of a billing machine refer to the student book in the section "8.2. Billing machines"

8.9.2 Consolidation activities

1) Draw and label the parts of a banknotes counter
2) Explain EBM Version 2

Answers:

1) For the labels of a banknotes counter refer to the student book in the section "A. Parts of a banknote counter"
2) For the definition of EBM Version 2 refer to the student book in the section "Billing machines in Rwanda"

8.9.3 Extended activities

1) Explain how EMB machines used by business owners facilitate in the following:
   a) Stock management
   b) Taxes calculations and collection
   c) Profit calculation
   d) Daily sales
2) There are banknotes only counters which can also detect fake notes. Explain how they work

Answers:

1) Students explain how EBM improve stock management, taxes calculations and collection, profit calculation and daily sales. To get explanation on this they do a research on the internet and refer also to the student book in the section "8.2. Billing machines".
2) Student also do a research on banknotes only counters which can also detect fake notes. They use the same mechanism as note detectors. Refer also to the student book in the section "8.3 Note detector".

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