



COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCSE204 – VISUAL PROGRAMMING

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2022

LECTURER: MR MUKHALELA B

DURATION: 3 HRS

INSTRUCTIONS

Answer ALL questions in Section A. **Use an official Examination Answer booklet provided.**

Answer Any three (3) questions in Section B.

The marks allocated to **each** question are shown at the end of the section.

Credit will be awarded for logical, systematic and neat presentations.

Section A

Question 1 Compulsory Theory based

- a. Text based programming languages are better when it comes to program implementation compared to block-based languages. Comment on this statement. [10]
- b. Describe briefly the history of visual programming. [15]

Section B

Question 2 C# programming

Create an application that will allow a loan amount, interest rate, and number of finance years to be entered for a given loan. Determine the monthly payment amount. Calculate how much interest will be paid over the life of the loan. Display an amortization schedule showing the new balance after each payment is made. Design an object-oriented solution. Use two classes. For the Loan class, characteristics such as the amount to be financed, rate of interest, period of time for the loan, and total interest paid will identify the current state of a loan object. Include methods to determine the monthly payment amount, return the total interest paid over the life of the loan, and return an amortization schedule. In the second class, instantiate an object of the loan class. Allow the user to input data about more than one loan. Display in the LoanApp class the payment amount, amortization schedule, and the total amount of interest to be paid. [25]

Question 3 C# Programming

XYZ JobSource is in the business of matching computer systems analysts and programmers with employers needing temporary help. They pay a flat rate of RTGS150.00 per hour to their contract analyst and programmers. Contractors are paid on a weekly basis or at the completion of a project, whichever comes first. Each Contractor logs his or her own hours. They have asked you to develop a windows application to be used by the contractors to determine how much money they will take home for a given period of time. XYZ JobSource is located in a city that does not pay local sales tax. The company pays no benefits in terms of insurance or retirement. They are required by law to deduct Social Security tax and Pay as You Earn (PAYE) from each check. The amount of Social Security deductions is calculated at 7.85% of the gross pay. The amount of PAYE withholding is based on the number of dependent allowances. The following formula is used: $\text{PAYE deduction} = (\text{GrossIncome} - (\text{GrossIncome} * 5.75\% * \text{number of dependents})) * 25\%$. They also charge a membership fee to each contractor of 13% of their gross Income. Design a GUI that will accept as Input the contractor's name, the number of dependents, and the number of hours worked. Display the Gross Income, deductions, and net pay. [25]

Question 3 Scratch Programming

Imagine you have just joined a Game development software development and your first task was to develop a game to be embedded into a small hand-help cellphone popularly known as 'kambudzi' on the local market. You have been given the liberty to imagine your own game choice but to adhere to the following principles in your game design: [25]

- Motivate the game player to want to score higher
- Put obstacles which are such that if avoided will increase current score in a motivating manner to the player.
- An appealing (colorful) Graphical User Interface.
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Question 4 Blockly Programming

- a. Using you allocated Answer Booklet, write the equivalent JavaScript code for the below visually implemented program.

[10]

- b. You have been given the following Blockly-base visual programming based javascripts code below; reproduce a visual program based on the code below.

```
while (notDone()) {
    moveForward();
    if (isPathLeft()) {
        turnLeft();
    }
}
```

[15]