

# School Based Assessment

## Information Technology

Spreadsheet Management  
Database Management  
Word Processing  
Problem Solving  
Programme Implementation

Question Title:  
“Canival”

### Preface from the Teacher

This is the current draft of the School Based Assessment(SBA) which you will be required to complete and submit. ~~The final draft will be posted on or before October 31. Please check back for an update.~~

This SBA is for students sitting the exam from St Jago High School ~~and St Jago's Evening Institute~~ in May/June 2010. This document is final and supersedes all publication of the St Jago High School prior to December 01, 2009.

### Propriety Statement

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## SCHOOL BASED ASSESSMENT

### Introduction

Carnival has long been a traditional cultural festival in several Caribbean territories. Every year, thousands of costumed masqueraders parade through the streets, dancing to the pulsating sounds of steelband, calypso and soca. Most of these revelers register to participate in the band of their choice months before the festivities begin. Organizers of these bands must utilize management and organizational skills in order to stage a successful event. As a bandleader of one of these carnival bands, you are required to utilize suitable word-processing, spreadsheet, database management as well as a programming application to design and implement computer-based solutions to the tasks involved in the management of your carnival band.

### Limitations

Here we will place miscellaneous limitations, which include the number of items you may have.

1. For spreadsheet please limit your masqueraders as follows:
  - a. You may not have less than ~~20~~15 persons (masqueraders).
  - b. You may not have more than 30 persons (masqueraders).
2. For database management please limit your masqueraders as follows:
  - a. You may not have less than ~~12~~7 persons (masqueraders) in **EACH** section.
  - b. You may not have more than ~~15~~9 persons (masqueraders) in **EACH** section.

## Spreadsheet

The financial records of the band are maintained using a spreadsheet application. The names of masqueraders are listed by section. Both men as well as women may register to play in each section. There are five sections in the band. The cost of costumes is quoted in US dollars. The cost by section is \$160, \$220, \$280, \$350 and \$425 respectively. Masqueraders are given the option of paying for the costume in three installments, or paying the full cost in one payment. Many people utilize the installment option. Single full payment attracts a discount of 10%, while payment by installments attracts an interest of 15%. Installments should be spread over three equal payments.

Each masquerader pays an 'Inclusive' fee. A \$150 Inclusive fee entitles the masquerader to food, drinks, access to portable bathroom facilities and bottled water during the carnival parade through the streets. However, a payment of \$50.00 entitles the masquerader to portable bathroom facilities and bottled water only.

Expenditure is incurred in the provision of several amenities for masqueraders during the carnival. The bandleader must supply food, drinks, portable bathroom facilities, transportation, music, security personnel, and artiste fees. In addition, the costs of material for the manufacture of costumes as well as labour costs are incurred.

Because of the anticipated large number of masqueraders, the bandleader has decided to manage the income and expenditure of each section separately.

You are required to:

1. Design a worksheet(s) which accepts income and expenditure costs for each section.
  - a. Your worksheet must record all payments made by masqueraders, (a few persons have only made one or two of the required three installment payments on costumes), the total amount paid by each person as well as the grand total collected must be calculated. Costume payments must be made in US dollars. ~~The total payments made by each person however, must be converted to the equivalent amount in local currency.~~
  - b. In an appropriate row, count the number of masqueraders in the section; calculate the total payment on costume, Inclusive fees and the total overall payment.
  - ~~b.c.~~ In a appropriate column convert the total payment made by each person to local currenct. Use the rate \$ 1.00 (unit used in the sba) = \$81.00 (local currency)
  - ~~c.d.~~ The expenditure incurred for each section must also be calculated. Food is \$60.00 per person; drink is \$40.00 per person; material is \$150.00 and labour is \$75.00. Other services are provided at a flat rate for the entire band. These are as follows: bathroom- \$3000.00; transport \$2500.00; music - \$4000.00; security - \$1800.00; artiste - \$5000.00. The cost of each flat rate services for each section = Rate /No. of Sections.
  - ~~d.e.~~ Food and drinks are increased by 15% of the starting per person cost for each successive section, material is increased by 12% of the starting cost for each

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successive section, while labour is increased by 8% of the starting cost for each successive section.

~~e.f.~~ The total cost of each service for each section = Cost of service X the number of masqueraders in the section.

~~f.g.~~ Save your spreadsheet as **Masqueraders1**.

2. Modify your spreadsheet to effect the following changes:

- (a) Insert a masquerader before the last person in each of the first three sections.
- (b) Delete the third masquerader from each of the last two sections.
- (c) Create a table that shows the total income and total expenditure by sections.

Save your spreadsheet as **Masqueraders2**.

3. Perform the following modifications to your worksheet.

- (a) The cost of raw materials has decreased. Change the initial cost of materials from \$150.00 to 135.00.
- (b) Labour costs however, have increased. The starting cost of sewing costumes for the first section is now \$95.00.

~~(c)~~ Due to inflation, it has become necessary to increase the cost of food and drink from 15% to 20%. However, the first section has been spared this price hike.

~~(c)~~ Sort the first two sections in descending order by Total Payment.

~~(d)~~ Sort the third and fourth sections in ascending order by Name, then by cost.

~~(e)~~ Create an appropriate chart which compares the income and expenditure of each section. Give this chart a suitable name.

~~(f)~~ Create an appropriate chart, with appropriate data labels, which shows the distribution of expenditure for any one named section.

Save your spreadsheet as **Masqueraders3**.

## Database Management

You should use a suitable application to manage data on persons who have registered to play in your band. Personal data on each applicant, such as name, sex, address, age, size and telephone contact, must be stored. Masqueraders' payment data must also be stored. The cost of costumes varies by section. Costume prices range from US\$160 to US\$425. In addition, the section of the band in which they choose to play must be recorded. The band has five named sections. Each section has a specific four-digit section code. Your database should contain three tables.

Populate your table using firstly data from your spreadsheet.

Populate your database with data on at least ~~twelve~~ seven but not more than ~~fifteen~~ nine persons in each section.

You should test your database by performing queries to show:

1. The name, age, size and address of all persons registered to play in a named section Name this query **Section**.
2. The ID Number, name, sex, and age of all female masqueraders between twenty and thirty years old. Name this query **TwentiesLadies**.
- ~~3. The ID Number, LastName, section and total payment of all persons who have paid in full for their costume in a given section. The data supplied should be sorted by Last name. Name this query **Paidup**.~~
- ~~4.3. The bandleader has experienced difficulty in securing the advertised material for the costumes in the third section. He has therefore decided to give a 15% rebate on the total payment made to all persons in this section. Calculate this rebate and show it along with the name, address and total payment of all persons in one named section. Name this query **Rebate**.~~
- ~~5. As an incentive to attract more female masqueraders to his band, the bandleader has decided to give a gift voucher to the value of 12% of the total payment to all females registered in the band. Show the name, sex, total payment and voucher value for all female revelers. Name this query **GiftVoucher**.~~
- ~~6.4. Two revelers have asked to be refunded their payments, as they were forced to travel prior to the date of the carnival. Delete all records that pertain to these two named persons. Print the SQL statement which was used to delete these record.~~
- ~~7.5. Generate a report that shows the names, ID Number, section, age and total payments for all revelers who have paid in full for their costumes. The report should be grouped by section and sorted in descending order by LastName, then by FirstName. The report should calculate and show the total amount of funds paid by the revelers of each section. The average payment of each section should also be generated as well as the grand total of payments made. This report should be given a suitable title utilizing two lines.~~

### Wordprocessing

1. Create a full page advertisement for a local newspaper that informs the public about your carnival band. This must be designed on letter size paper.
2. Using a suitable feature of your wordprocessing application, create a document which should be mailed to persons who have paid on full for their costumes. The document should inform masqueraders of the parade route, the time of assembly and departure of the band onto the parade.

[The report from the database section should be inserted into your document.](#)

Include the **income and expenditure chart** from the Microsoft excel section in your letter.

The final paragraph should express the bandleaders gratitude to masquerades for choosing to join his band for the carnival celebrations.

3. Design a suitable letterhead for your document which should be placed in a header.  
A suitable footer must be inserted, with the words center aligned.
4. The document should be justified. The left margin must be 1.5".

### Problem-Solving

1. Develop an algorithm or write pseudocode that accepts as input the name and section of a potential masquerader. The pseudocode should continue to run until a blank name is input. From the input the pseudocode should determine how much the masquerader should pay. The pseudocode should output a message in a format that includes the masqueraders name and the amount to pay.
2. Design and execute a trace table that accepts masqueraders' data and show the expected output. The table should have at least ten masqueraders showing person meeting all possible outputs and variations.

### Program Implementation

3. Using the programming language Pascal, write program code to implement the algorithm in (1).

## ◆ GUIDELINES FOR THE CONDUCT OF THE SCHOOL BASED ASSESSMENT

The guidelines for conducting the SBA which consists of a practical project set by the teacher are shown below.

### 1. AIM

To provide students with the opportunity to demonstrate their problem solving and programming skills as well as their ability to use productivity tools effectively in:

- (i) entering, manipulating and presenting text data;
- (ii) simulating a worksheet;
- (iii) entering data, performing simple analysis on data and presenting data using a database management tool.

### 2. ASSIGNMENT

The School Based Assessment consists of one practical project consisting of four related components, prepared and marked by the teacher in accordance with CXC guidelines.

The components will test Problem Solving and Programming as well as the application of processes involved in the use of Database Management, Spreadsheets and Wordprocessing. The four components will therefore cover the Specific Objectives in Sections 2, 3, 6, 7 and 8.

### 3. ROLE OF THE TEACHER

The role of teacher is to:

- (i) assign the project for the School Based Assessment.
- (ii) provide guidance throughout the life of the projects. *The teacher should work with candidates to develop a project management chart with definite time lines for achieving clearly identified objectives, from project inception to project completion.*
- (iii) guide the candidate through the SBA by helping to clarify the problem or by discussing possible *approaches to solving the problem*. Teachers, while giving guidance, should guard against *providing a complete solution to the problem for the candidate* or prescribing a specific format that should be followed.
- (iv) assess each student's skills in problem solving and algorithm development using flowcharts or pseudocode, coding an algorithm in Pascal and the effective use of productivity tools to perform prescribed activities. The development of the project is a continuous exercise that occurs during scheduled class hours as well as outside class times. At a time to be determined by the teacher the relevant component will be assessed and the marks recorded. *Hardcopies of the completed documents should be kept by both the teacher and student*. The teacher should use the mark scheme provided by CXC and include any comments pertinent to the conduct of the assessment.
- (v) guide the candidate through the SBA by helping to clarify the problem or by discussing possible formats.
- (vi) ensure that students are allowed sufficient access to equipment to allow successful completion of their projects.

### 4. ASSESSMENT CRITERIA

The following is the mark scheme for assessing SBA assignments. Teachers must clearly indicate the breakdown of the marks allocated for each question on the candidates' SBA paper.

- (i) Wordprocessing - 20 marks
- (ii) Spreadsheets – 20 marks
- (iii) Database Management – 20 marks
- (iv) Problem Solving and Programming – 30 marks
  - Algorithm Development – 10 marks
  - Trace Table Development – 5 marks
  - Programme Working to Specification – 15 marks

You can see the last four pages of this document for a detailed mark scheme which will outline how marks are allotted for each skill.

### REQUIREMENTS OF SBA PROJECT DOCUMENTATION

The final and complete solution must contain:

Requirements	Guidelines
Cover page	The information supplied here is essential since it is used to associate the submission with a particular candidate.
Introduction	
Table of contents	Provides easy reference when evaluating the project.
The Spreadsheet Section	The final print out of each spreadsheet and all charts. A formula sheet for each (or a suitable cross section of the formula sheet)
The Database Section	A print out of at least one table in dataview and a screen shot of the design view of the same table. A print out of the results of each query A forms and/or reports done.
The Word Processing Section	The mail merge MAIN document (form letter), a print out of the first 5 MERGED letters, and a print out of the DOUMENT SOURCE. A print out of all other word document created.
The Problem-solving and Program Implementation Section	
<ul style="list-style-type: none"> <li>• Problem definition</li> </ul>	This section provides a clear statement of the problem. Students are also expected to draw flowcharts.
<ul style="list-style-type: none"> <li>• Program listing and output               <ul style="list-style-type: none"> <li>○ Pseudo code</li> <li>○ Pascal code</li> </ul> </li> </ul>	This section is essential for assessing whether the component submitted is correct and complete. In addition, this section is used to evaluate the internal documentation. Candidates must demonstrate that they can select the appropriate features of the language to obtain the solution to the problem.
<ul style="list-style-type: none"> <li>• Test data (if applicable)</li> </ul>	In situations where output is relevant, candidates are required to supply the test data that produced the output. This information would be necessary to determine whether the tasks have been performed correctly.
Grade Sheets	Each candidate must print a copy of the last four (4) pages of this document and include it at the end of the submission.

<b>CANDIDATE NAME</b>		<b>TEACHER INITIALS</b>	
<b>CANDIDATE NUMBER</b>			

### SPREADSHEET SBA MARK SHEET

<b>DESCRIPTION</b>	<b>SPECIFIC DETAILS</b>	<b>MARKS</b>	<b>MARKS ALLOTTED</b>
The effectiveness with which students use pre-defined systems functions to form arithmetic, logical and relation expressions.	• Demonstrating awareness of the existence of appropriate formulae	1	
	• Use of appropriate formulae to solve numeric problems	2	
	• Replicating formulae	1	
	• Use of range names, relative and absolute addressing formats	2	
		(6)	
The effectiveness with which students manipulate the spreadsheet.	• Copying data	} 2	
	• Moving data		
	• Use of formatting features to allow clarity of display		
	• Inserting page breaks appropriately		
	• Deleting and inserting rows such that formulae remain unaffected	(2)	
The effectiveness with which students use the search and sorting facilities.	• Setting up primary and secondary key fields	1	
		(1)	
The effectiveness with which students perform graphic operations to present information.	• Creating appropriate charts to represent data	3	
	• Labelling charts appropriately	1	
	• Comparing different series of data on a single bar chart or line graph	1	
		(5)	
The effectiveness with which students use spreadsheets to solve specific problems.	• Conceptualizing a solution using the spreadsheet		
	- select appropriate column and row labels	1	
	- layout spreadsheet to permit easy additions and deletions	1	
	- use constants in cells, instead of placing values directly in formula	1	
	• Organizing spreadsheet so that data can easily be interpreted	1	
	• Extracting data to allow summary information	2	
		(6)	
		<b>TOTAL MARKS AWARDED</b>	

<b>CANDIDATE NAME</b>		<b>TEACHER INITIALS</b>	
<b>CANDIDATE NUMBER</b>			

**DATABASE MANAGEMENT SBA MARK SHEET**

<b>DESCRIPTION</b>	<b>SPECIFIC DETAILS</b>	<b>MARKS</b>	<b>MARKS ALLOTTED</b>
The effectiveness with which students use facilities in creating and modifying database.	<ul style="list-style-type: none"> <li>• Defining fields and selecting appropriate data types to create tables</li> <li>• Identifying appropriate primary keys</li> <li>• Adding/deleting/sorting/ modifying records</li> <li>• Deleting fields and changing field definitions</li> </ul>	3  1 2  1  (7)	
The effectiveness with which students use the query facility.	<ul style="list-style-type: none"> <li>• Searching database               <ul style="list-style-type: none"> <li>- use three tables, two tables one table in queries to generate new tables</li> <li>- use multiple conditions</li> </ul> </li> <li>• Producing calculated fields</li> </ul>	3  2 2  (7)	
The effectiveness with which student use report generating facilities.	<ul style="list-style-type: none"> <li>• Generating report on specified fields</li> <li>• Grouping on fields</li> <li>• Sorting on fields</li> <li>• Using summary features, for example, count and sum</li> </ul>	2 1 1 2  (6)	
		<b>TOTAL MARKS AWARDED</b>	

<b>CANDIDATE NAME</b>		<b>TEACHER INITIALS</b>	
<b>CANDIDATE NUMBER</b>			

**WORDPROCESSOR SBA MARK SHEET**

<b>DESCRIPTION</b>	<b>SPECIFIC DETAILS</b>	<b>MARKS</b>	<b>MARKS ALLOTTED</b>
The effectiveness with which the student uses formatting facilities to create and enhance the document.	<ul style="list-style-type: none"> <li>• Formatting for presentation               <ul style="list-style-type: none"> <li>- justification</li> <li>- single and double line spacing</li> <li>- paragraph styling (indent, hanging, block)</li> </ul> </li> </ul>	2	
	<ul style="list-style-type: none"> <li>• Formatting for emphasis               <ul style="list-style-type: none"> <li>- bold</li> <li>- italics</li> <li>- borders and shading to highlight and give emphasis</li> <li>- font and point size</li> </ul> </li> </ul>	2	
	<ul style="list-style-type: none"> <li>• Other features               <ul style="list-style-type: none"> <li>- use of spell checker/search and replace/grammar check</li> <li>- search and replace</li> </ul> </li> </ul>	1	
		(5)	
The effectiveness with which students use formatting facilities to present information.	<ul style="list-style-type: none"> <li>• Page Layout               <ul style="list-style-type: none"> <li>- set margins</li> <li>- change page orientations</li> <li>- change paper size</li> <li>- text orientation</li> </ul> </li> </ul>	2	
	<ul style="list-style-type: none"> <li>• Headers/footers/endnotes</li> </ul>	1	
	<ul style="list-style-type: none"> <li>• Tables</li> </ul>	2	
		(5)	
The effectiveness with which students use facilities to create flyers or brochures.	<ul style="list-style-type: none"> <li>• Multiple page/book fold/columns</li> </ul>	2	
	<ul style="list-style-type: none"> <li>• Use of graphics</li> </ul>	1	
	<ul style="list-style-type: none"> <li>• Clarity of itemization               <ul style="list-style-type: none"> <li>- insert/delete (word, sentence, paragraph document)</li> </ul> </li> </ul>	1	
	<ul style="list-style-type: none"> <li>- block operations - move/copy/cut and paste</li> </ul>	1	
		(5)	
The effectiveness with which students use facilities to perform mail merge.	<ul style="list-style-type: none"> <li>• Defining appropriate fields in the document</li> </ul>	1	
	<ul style="list-style-type: none"> <li>• Creating primary document</li> </ul>	1	
	<ul style="list-style-type: none"> <li>• Creating secondary document appropriately</li> </ul>	1	
	<ul style="list-style-type: none"> <li>• Performing the mail merge</li> </ul>	2	
		(5)	
		<b>TOTAL MARKS AWARDED</b>	

<b>CANDIDATE NAME</b>		<b>TEACHER INITIALS</b>	
<b>CANDIDATE NUMBER</b>			

**PROBLEM SOLVING SBA MARK SHEET**

<b>DESCRIPTION</b>	<b>SPECIFIC DETAILS</b>	<b>MARKS</b>	<b>MARKS ALLOTTED</b>
Algorithm Development			
Problem statement that defines the problem.	<ul style="list-style-type: none"> <li>• Problem is clearly defined</li> </ul>	1 (1)	
Representing the solution in flowchart or pseudocode.	<ul style="list-style-type: none"> <li>• Start of solution</li> <li>• Definition of variables               <ul style="list-style-type: none"> <li>- identify variables</li> <li>- initialize variables</li> </ul> </li> <li>• Processing               <ul style="list-style-type: none"> <li>- request for data</li> <li>- storing data</li> <li>- appropriate and logical use of control structures:                   <ul style="list-style-type: none"> <li>selection statements;</li> <li>looping constructs</li> </ul> </li> <li>- output results</li> </ul> </li> <li>• End of solution</li> </ul>	1 1 1 1 2 2  1 (9)	
Trace Table Development			
Constructing the trace table.	<ul style="list-style-type: none"> <li>• ALL variables correctly identified and used</li> <li>• Appropriate test data</li> <li>• Data set complete               <ul style="list-style-type: none"> <li>- data set test ALL areas for robustness</li> <li>- [data set test SOME areas]</li> </ul> </li> <li>• Change in values correctly demonstrated</li> </ul>	1 1 2  [1] 1 (5)	
		<b>PAGE TOTAL (15)</b>	

Programme Working to Specification			
The effectiveness with which the program achieved the objective.	<ul style="list-style-type: none"> <li>• Program compiled (1)</li> </ul>	1	
	<ul style="list-style-type: none"> <li>• Output (2)               <ul style="list-style-type: none"> <li>- output is correct for ALL values in teacher's data set</li> <li>[Output is correct for SOME values in the teacher's data set]</li> </ul> </li> </ul>	2 [1] (3)	
The effectiveness with which the language features are used to achieve a working solution.	<ul style="list-style-type: none"> <li>• Appropriate use of features of the language (2)               <ul style="list-style-type: none"> <li>- appropriate choice of data types for ALL variables</li> <li>[appropriate choice of data types for SOME variables]</li> </ul> </li> </ul>	2 [1]	
	<ul style="list-style-type: none"> <li>• Appropriate use of control structures (7)               <ul style="list-style-type: none"> <li>- appropriate initialization of variables</li> <li>- appropriate use of sequence</li> <li>- appropriate use of if then else construct</li> <li>[inefficient use of if then construct]</li> </ul> </li> </ul>	1 1 2 [1]	
The effectiveness with which the language features are used to achieve a working solution. (cont'd)	<ul style="list-style-type: none"> <li>- appropriate use of looping construct to manipulate arrays and perform other tasks</li> <li>[inefficient or <i>inappropriate</i> use of loop construct]</li> </ul>	3 [1] (9)	
The effectiveness with which the language features are used to achieve clarity.	<ul style="list-style-type: none"> <li>• Clarity of program (3)               <ul style="list-style-type: none"> <li>- program documentation through variable names; author of program; date created; simple statement of task program solves</li> </ul> </li> </ul>	1	
	<ul style="list-style-type: none"> <li>- readability (correctly indented; logical flow of control; easy to follow;)</li> <li>- user-friendly.</li> </ul>	1 1 (3)	
		<b>PAGE TOTAL (15)</b>	
		<b>TOTAL MARKS AWARDED</b>	

CANDIDATE NAME		TEACHER INITIALS	
CANDIDATE NUMBER			
<b>MARKS</b>	The Spreadsheet Section	<b>20</b>	
	The Database Section	<b>20</b>	
	The Word Processing Section	<b>20</b>	
	The Problem-solving and Program Implementation Section	<b>30</b>	
	<b>TOTAL MARKS AWARDED</b>	<b>90</b>	