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**Programming Task**

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# Explanation and Instruction

In this first task as part of the team you need to learn and carry out a simple programming task and then submit the necessary reports to your supervisor (teacher).

The report forms may be found in this document after an explanation of the sections of the task.

## Online Environment

### Task instructions

The purpose of this task is to to create a simple application through introductory programming techniques. You are to work in an online assessment environment, i.e. all work must be comleted digitally and placed in the LMS.

Remember, you are in the role of a trainee IT officer and so are expected to work and learn during your employment. You are to work independendently though your supervisor (teacher) will provide some context and support in class groups but will always be available to assist you as an individual.

You must use the templates provided to document your responses to this task.

You must follow the word-limits specified in the documents and forms.

You work will be assessed using the performance checklist provided.

As an ‘employee; in this scenario you need access to the following resources to complete your task:

The Learning Management System for this course – Task 1

Standard operating/workplace procedures used by your employing organisation

Access to the programming standards and guidelines, accessible at https://www.python.org/ for Python programming language

Programming software (Python which can be downloaded at https://www.python.org/)

Access to a computer, printer and the Internet

An integrated development environment (IDE)

### Online assessment scenario

You are required to design and develop one simple application through introductory programming techniques. The language to develop the simple application should be Python.

The following are the goals and objectives to complete this assessment task:

* Identify, establish and clarify design specifications, programming standards and guidelines
* Write and edit code and technical data in a logical manner
* Develop documentation outlining changes and tests performed using appropriate structure, layout and technical programming language
* Take responsibility for planning, sequencing and prioritising tasks and own workload
* Test and review code according to feedback obtained during design and development of application
* Analyse required outcomes and determines program code using problem-solving techniques
* Use a formal decision-making process, identifying and evaluating several choices against a limited set of criteria when selecting syntax
* Evaluate decisions in terms of how well they meet stated design specifications
* Complete complex tasks using features of digital tools

Your supervisor can answer your questions related to understanding the requirements associated with this task. The supervisor will act as your client as well to participate in all related activities to complete this assessment task.

### Roles and responsibilities

As part of your job role, you have the following job responsibilities:

* Developing and building a simple application taking into consideration the clients’ requirements
* Applying programming language syntax, sequence, selection and iteration constructs
* Documenting changes and tests performed
* Reviewing code according to feedback obtained during design and development of application.

### Task requirements

This task requires you to demonstrate skills and knowledge to design and develop one simple application through introductory programming techniques. You need to complete the following activities:

Activity 1: Gather all information required to complete the task

Activity 2: Create a program/game pig latin and prepare a report

Activity 3: Test the application and debug the problem if necessary

Activity 4: Submit the application and seek feedback

# Activity 1: Gather all information required to complete the task.

### Activity context

You are required to identify and establish the application task before commencing the development work. To do this, you need to arrange and participate in a meeting with your supervisor. The purpose of the meeting is to set very clear requirements and expectations regarding the following:

* The task required to be completed
* The resources required to complete the task
* Design specifications
* Programming standards and guidelines

### Application task: Develop an application Pig Latin

Pig Latin is not an actual language. It is what linguists call a language game. A language game (also called a "ludling" or "argot") is a set of rules applied to an existing language which make that language incomprehensible to the untrained ear.

Pig latin refers to a game that alters the word given by the user. Pig Latin takes the first consonant (or consonant cluster) of an English word, moves it to the end of the word and suffixes an “ay”, or if a word begins with a vowel you just add way to the end.

To create the Pig Latin form of an English word the initial consonant sound is transposed to the end of the word and an “ay” is affixed (Ex.: "banana" would yield anana-bay).

You need to write a program using an array. The program should be able to take input from user and apply Pig Latin translator.

### Description of the activity

This activity requires you to arrange and participate in a meeting with your supervisor. You are required to complete the following:

Part A: Arrange a meeting

Part B: Participate in the meeting and prepare meeting minutes

# Part A: Arrange a meeting

This part requires you to:

1. Read and understand the application task requirements
2. Write a brief of what is required to be completed
3. Identify the purpose of the meeting
4. Set up the clear expectations and requirements to develop the application
5. Select the right participant to attend the meeting
6. Decide where and when to hold the meeting
7. Decide what time the meeting will start and end
8. Confirm the availability of the participants and space to conduct the meeting. If meeting off-site, think of a location that is convenient and suits your needs. If it is a virtual meeting, include dial-in information.
9. Prepare a preliminary meeting agenda to participate in a meeting with your supervisor
10. Topics you want to discuss
11. Seek input from the participants
12. Identify the next steps to complete the task

You must use Form 1 to document your response.

## Form 1: Arrange a meeting

|  |
| --- |
| **Application task requirements** |
| Write a brief of what is required to be completed and identify the purpose of the meeting (30-50 words)  Expectations and requirements (30-50 words) |
| **Meeting requirements** |
| Who is participating?  Why are they participating? (10-20 words)  Where meeting will occur:  When the meeting occurs:  Note: Provide evidence of arranging the meeting, confirming the availability of the participants and space |
| **Meeting agenda** |
| Meeting agenda items:  The next steps to complete the task:  Note: Provide evidence of seeking input from the participants regarding the meeting. |

# Part B: Participate in the meeting and prepare the meeting minutes

This part requires you to participate in the meeting with your supervisor.

You are required to gather all the necessary information to complete the task. The information should include:

1. What is your task/s?
2. Who is your client/s?
3. What is the task/s all about?
4. When the task/s should be completed?
5. Which platform/s should be used to complete the task?
6. What is the project scope, what is included and not included?
7. How will success be measured?

When participating in the meeting, you are required to:

* Gather and record all necessary information to complete the task
* Clearly understand and write down the expectations and requirements from the task
* Uses listening and questioning techniques to confirm requirements and articulate complex concepts

Note: You must confirm the requirements if you are unsure or are not clear regarding what is expected from you.

You must use Form 2 to complete this part of the activity.

## Form 2: Meeting minutes template

|  |  |
| --- | --- |
| Program/Area: | *[Insert program/area with which the project is affiliated]* |
| Meeting Purpose: | *[Insert name or purpose of meeting]* |
| Meeting Date: | *<mm/dd/yyyy>* |
| Meeting Time: | *[Insert time]* |
| Meeting Location: | *[Insert location]* |
| Meeting Facilitator: | *[List names]* |
| Attendees: | *[List names]* |
| Minutes Issued By: | *[Insert name of issuer]* |

| **Decisions Made:** (What, Why, Impacts) |
| --- |
| 1. *[List and describe decision made]*    * *[Provide additional description of or information about the decision]* 2. *[List and describe decision made]*    * *[Provide additional description of or information about the decision]* |
| **Discussion:** (Items/Knowledge Shared) |
| *[Itemise and describe discussion point]*   * *[Provide additional details about the discussion]*   *[Itemise and describe discussion point]*   * *[Provide additional details about the discussion]* |
| **Miscellaneous Items:** |
| *[Itemise and describe any additional miscellaneous items]*   * *[Provide additional details about the miscellaneous items]*   *[Itemise and describe any additional miscellaneous items]*   * *[Provide additional details about the miscellaneous items]* |

## Performance Checklist: Activity 1

|  |  |  |  |
| --- | --- | --- | --- |
| Your task must address the following performance criteria/ performance checklist. | | | |
| To be assessed as satisfactory (S) in this assessment task the trainee needs to demonstrate competency in the following critical aspects of evidence: | S | N/S | Supervisor to complete  (Comment and feedback to trainee) |
| 1. Use the templates provided to complete the assessment activities |  |  | Click or tap here to enter text. |
| 1. Read and understand the application task requirements |  |  | Click or tap here to enter text. |
| 1. Write a brief of what is required to be completed |  |  | Click or tap here to enter text. |
| 1. Identify the purpose of the meeting |  |  | Click or tap here to enter text. |
| 1. Set up the clear expectations and requirements to develop the application/ Clarify task with required personnel |  |  | Click or tap here to enter text. |
| 1. Prepare a preliminary meeting agenda to participate in a meeting with the supervisor |  |  | Click or tap here to enter text. |
| 1. Gather all the necessary information to complete the task. |  |  | Click or tap here to enter text. |
| 1. Clearly understand and write down the expectations and requirements from the task |  |  | Click or tap here to enter text. |
| 1. Took audience, purpose and contextual factors into account when making decisions about what to communicate with whom, why and how. |  |  | Click or tap here to enter text. |

Activity 2: Create a program/game (Pig Latin) and prepare a report

This activity is in continuation with Activity 1.

### Activity context

You are required to design and develop an application in this activity and submit it with a report.

### Description of the activity

In this assessment activity, you are required to:

1. Write an algorithm and create a flowchart on how the program works.
2. Write a program in Python using an array to translated words.
3. Write an algorithm for the Pig Latin translator.
4. Design a flowchart showing how the system works.
5. Use appropriate Python language syntax to write the program.
6. Use appropriate comments in program.
7. Describe the functions of the program.
8. Write the program in Python fulfilling all the specification.
9. You need to submit your report with all the output of the test case to Supervisor in a MS Word file.
10. You will also need to create a Python file so the supervisor can check the program.
11. Your supervisor will review the requirements and identify design specifications, programming standards and guidelines according to task requirements.

In this assessment task you must develop the algorithms and programs taking into consideration the following requirements:

* Introduction regarding the Pig Latin translator
* Design an algorithm in response to basic program specifications using mathematical formulae
* Develop application to meet program specification
* Confirm application meets initial specifications
* Provide information about using the translator
* Algorithm and flow chart of the Pig Translator
* Description of the number of string manipulation functions that are applied on the program
* Correct, concise and error free grammatical sentences
* Identify design specifications, programming standards and guidelines according to task requirements
* Apply basic language syntax rules
* Create code using language data types, operators and expressions
* Apply variables and variable scope
* Use program library functions
* Clarify the meaning of code using commenting techniques
* Apply language syntax in sequence, selection and iteration constructs
* Create expressions in selection and iteration constructs using logical operators
* Develop algorithms using sequence, selection and iteration constructs
* Create and use data structures
* Code standard sequential access algorithms used in reading and writing text files
* Apply string manipulation

## Performance Checklist: Activity 2

|  |  |  |  |
| --- | --- | --- | --- |
| Your task must address the following performance criteria/ performance checklist. | | | |
| To be assessed as satisfactory (S) in this assessment task the trainee needs to demonstrate competency in the following critical aspects of evidence | S | N/S | Supervisor to complete  (Comment and feedback to students) |
| Writing an algorithm and creating a flowchart on how the program works. |  |  | Click or tap here to enter text. |
| Writing a program in Python using an array to translated words. |  |  | Click or tap here to enter text. |
| Writing an algorithm for the Pig Latin translator |  |  | Click or tap here to enter text. |
| Designing a flowchart showing how the system works |  |  | Click or tap here to enter text. |
| Discussed the questions based on the activity context |  |  | Click or tap here to enter text. |
| Using appropriate Python language syntax to write the program |  |  | Click or tap here to enter text. |
| Using appropriate comments in program |  |  | Click or tap here to enter text. |
| Describe the functions of the program |  |  | Click or tap here to enter text. |
| Write the program in Python fulfilling all the specification |  |  | Click or tap here to enter text. |
| Identify design specifications, programming standards and guidelines according to task requirements |  |  | Click or tap here to enter text. |
| Apply basic language syntax rules |  |  | Click or tap here to enter text. |
| Create code using language data types, operators and expressions |  |  | Click or tap here to enter text. |
| Apply variables and variable scope |  |  | Click or tap here to enter text. |
| Use program library functions |  |  | Click or tap here to enter text. |
| Clarify the meaning of code using commenting techniques |  |  | Click or tap here to enter text. |
| Apply language syntax in sequence, selection and iteration constructs |  |  | Click or tap here to enter text. |
| Create expressions in selection and iteration constructs using logical operators |  |  | Click or tap here to enter text. |
| Develop algorithms using sequence, selection and iteration constructs |  |  | Click or tap here to enter text. |
| Create and use data structures |  |  | Click or tap here to enter text. |
| Code standard sequential access algorithms used in reading and writing text files |  |  | Click or tap here to enter text. |
| Apply string manipulation |  |  | Click or tap here to enter text. |

# Activity 3: Test the application and debug the problem if necessary

This activity is continuation with Activity 2.

### Activity context

You are required to test the application using the test case and debug the problem as required.

### Description of the activity

In this assessment activity, you are required to:

1. Examine variable contents and use debugging techniques to detect and correct errors
2. Create and conduct simple tests and confirm code that meets the design specifications
3. Document actions carried out and results of the tests performed

The test case should include the following parameters:

* Step
* Test Steps
* Test Data
* Expected Result
* Actual Result Status (Pass/Fail)
* Related notes

You need to conduct the tests and complete the attached test case forms.

## Form: Test case

|  |  |
| --- | --- |
| **Project Name:** | |
| **Test Case** | |
| **Test Case ID:** | Test Designed by: <Name> |
| **Test Priority (Low/Medium/High):** | Test Designed date: <Date> |
| **Module Name:** | Test Executed by: <Name> |
| **Test Title:** | Test Execution date: <Date> |
| **Description:** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Pre-conditions:** User has valid username and password  **Dependencies:** | | | | | | |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Post-conditions | | | | | | |

## Performance Checklist: Activity 3

|  |  |  |  |
| --- | --- | --- | --- |
| Your task must address the following performance criteria/ performance checklist. | | | |
| To be assessed as satisfactory (S) in this assessment task the trainee needs to demonstrate competency in the following critical aspects of evidence | S | N/S | Supervisor to complete  (Comment and feedback to students) |
| Examine variable contents and use debugging techniques to detect and correct errors |  |  | Click or tap here to enter text. |
| Create and conduct simple tests and confirm code meets the design specification |  |  | Click or tap here to enter text. |
| Document actions carried out and results of tests performed |  |  | Click or tap here to enter text. |
| Took audience, the test case should include the following parameters:  Step  Test Steps  Test Data  Expected Result  Actual Result Status (Pass/Fail)  Related notes |  |  | Click or tap here to enter text. |

# Activity 4: Monitor and seek feedback on the implementation and impact of decisions

This activity is in continuation with Activity 3.

This activity requires you to monitor and seek feedback on the developed application from your supervisor for the sign off process. You must submit the report you prepared along with your application to your supervisor.

You are required to:

Present the application to your trainer/assessor

Obtain feedback and sign off from required personnel

You will be assessed on:

1. Identifying and documenting regarding the Pig Latin game including:
2. Definition of array with syntax
3. Description of number of string manipulation function that are applied on the program
4. Documenting an appropriate algorithm
5. Design an algorithm in response to basic program specifications
6. Developing an application to meet program specifications
7. Confirm application meets initial specifications
8. Provide information about using the translator
9. Designing an efficient flow chart of how the program works
10. Algorithm and flow chart of the Pig Translator
11. Writing a program in an easy and efficient way
12. Use of clear and concise comments while programming
13. Creating test data and checking if the program is error free.
14. Correct, concise and error free grammatical sentences
15. Presenting application to trainer/assessor
16. Obtaining feedback and sign off from required personnel

You must use the form provided to complete this activity.

## Evaluation and feedback form

|  |  |  |
| --- | --- | --- |
| Feedback topic | Feedback provided | Comments |
| Algorithm and flow chart diagrams |  |  |
| Application to meet program specification |  |  |
| Write a program in easy and efficient way |  |  |
| Create test data and check the program if it is error free. |  |  |

Final sign off authority:

## Performance Checklist: Activity 4

|  |  |  |  |
| --- | --- | --- | --- |
| Your task must address the following performance criteria/ performance checklist. | | | |
| To be assessed as satisfactory (S) in this assessment task the trainee needs to demonstrate competency in the following critical aspects of evidence | S | N/S | Supervisor to complete  (Comment and feedback to students) |
| 1. Identified and documented about Pig Latin game included:  * Definition of array with syntax * Description of number of string manipulation function that are applied on the program |  |  | Click or tap here to enter text. |
| 1. Documented appropriate algorithm  * Design an algorithm in response to basic program specifications |  |  | Click or tap here to enter text. |
| 1. Develop application to meet program specification    * + - Description of number of string manipulation function that are applied on the program        - Description of number of string manipulation function that are applied on the program        - Confirm application meets initial specifications        - Provide information about using the translator |  |  | Click or tap here to enter text. |
| 1. Design an efficient flow chart of how the program works  * Algorithm and flow chart of the Pig Translator |  |  | Click or tap here to enter text. |
| 1. Write a program in easy and efficient way    * + - Use of clear and concise comments while programming        - Create test data and check the program if it is error free.  * Correct, concise and error free grammatical sentences |  |  | Click or tap here to enter text. |
| 1. Present application to trainer/assessor |  |  | Click or tap here to enter text. |
| 1. Obtain feedback and sign off from required personnel |  |  | Click or tap here to enter text. |