



COMPUTER
SCIENCE

INDUCTION ASSIGNMENT

INDUCTION ASSIGNMENT FOR Computer Science

Assignment

Students are expected to produce work with a minimum font size of 11. A bibliography should also be included at the end, to reference any sources used.

It is expected that your work will have your name in the header and that each task is clearly labelled. Screenshots should be printed and enlarged as appropriate, provided that no required information is removed. There are up to 2 marks awarded for adhering to Standard Ways of Working.

TASK 1 (6 marks)

Explain, using examples, the meaning of **programs**, **algorithms** and **source code**.

TASK 2 (4 marks)

Discuss why are there so many different programming languages?

TASK 3 (4 marks)

What are the difference between low level and high level programming languages?

TASK 4 (2 marks)

What is indentation and why is it important when writing programs?

TASK 5 (8 marks)

Produce a simple diagram and explain the differences between an interpreter and a compiler.

TASK 6 (6 marks)

Explain how programmers use methods of abstraction and decomposition to solve problems.

*For the remaining tasks, use a suitable programming language, i.e. Python. You will also need to **screenshot** both the source code and the results of the program when run, using different **test data** (**valid and invalid data**). Show different outcomes when appropriate. Validation needed.*

TASK 7 (10 marks)

Write the pseudocode and create a program to ask the user to guess a number from 0 to 9. If the user guesses the randomly generated number, they are told they are correct. Otherwise they are asked to guess again until the correct answer is given.

INDUCTION ASSIGNMENT FOR Computer Science

TASK 8 (10 marks)

Write the pseudocode and create a program to ask the user to set a new username and password into a login system. The system must then verify with the user what username and password has been entered and output whether it is a 'Match' or 'Incorrect'.

TASK 9 (10 marks)

Write the pseudocode and create a program for a train ticket machine. Set value of the ticket i.e. £2, user must enter their money. Change must be given if too much money is entered and users should be prompted if value not high enough.

TASK 10 (10 marks)

Write the pseudocode and create a program that asks the user to work out how many minibuses are available for a school trip. User must input how many people are going on the trip to calculate if there are enough seats. If so it should output 'We have enough seats'.

If there are not enough seats it must calculate how many extra minibuses are needed and then output 'Another x minibuses are needed', with x being the number of minibuses.

TASK 11 (15 marks)

Correct the following portion of code – indicate in red the changes and/or annotate changes

```
number = 17
run = 17
while run
guess = int(input(Enter a number:))
if guess = number:
print 'Yes.'
run = False
elseif guess > number
```

TASK 12 (15 marks)

This will be a timed practical assessment during lesson time. You will be asked to write a program of your choice which demonstrates some of the skills you have learnt from this assignment. Your program can be simple but should take some form of user input and provide appropriate output(s). There will also be marks for the overall user experience. Your code should include brief explanatory comments as appropriate.

There will be no access to the Internet during this assessment and you will not be permitted to bring in any notes or code/programs already written.

Submission of this task will take place in lesson by email/memory stick which the teacher can then use to test the program. No annotation or screenshots are required.

INDUCTION ASSIGNMENT FOR Computer Science

Assessment

The assignment will be assessed by your teacher and graded as High Quality, Good, Satisfactory or Unsatisfactory. The grade will be used alongside other assessments to decide whether students are on the appropriate course early on. You will also receive a final overall mark.

Completion dates

The completion date for this assignment is the **Fri 14 September**. It should be submitted by hard copy to your teacher. Contact details of teaching staff will be given to students at the start of the course in September.

Further Study/Websites (including online books)

www.thestudentroom.co.uk

<http://www.bbc.co.uk/news/technology/>

<http://www.eweek.com/c/a/IT-Management/10-Programming-Languages-You-Should-Learn-Right-Now/>

<http://www.sitepoint.com/best-programming-language-of-2013/>

<http://www.cs.waikato.ac.nz/~marku/languages.html>

<https://www.python.org/>

<http://greenteapress.com/thinkpython/thinkpython.html>

<http://thepythongamebook.com/en:pygame:start>

<http://www.itmaybeahack.com/homepage/books/python/html/index.html>

<http://inventwithpython.com/>