

Tech-level Assignment Brief

Qualification title	Level 3 Technical Level IT: Scripting and App Programming, IT: Programming. Foundation Tech Level IT: Scripting and App Programming
Unit code	M/507/6476
Unit title	Website Technologies

Learner name	
Tutor/Assessor name	
Assignment title	
Date assignment issued	Submission Date

	Performance Criteria		
	Pass	Merit	Distinction
Performance Outcome	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15	M1, M2, M3, M4. M5. M6. M7. M8. M9. M10, M11	D1, D2, D3, D4

Tasks	Performance criteria covered
Task 1	P1, P2, M1, D1
Task 2	P3, M2, D2, P4, M3, P5, M4, D3, P6, M5
Task 3	P7, P8, P9, M6
Task 4	M7
Task 5	P10, P11, M9, P12. P13
Task 6	M8
Task 7	P14, M10, P15, M11, D4

Submission Checklist (please insert the items the learner should hand in)	Confirm submission
Task 1 – Research notes highlighting positive and negative features and findings.	
Task 1 – A detailed presentation with speaker notes and references to research sources.	
Task 1 – Assessor observation record of delivery of presentation	
Task 1 – Assessor confirmation that sufficient research has been carried.	
Task 2 - A form-based registration page for collecting information from new customers.	
Task 2 - A login page to allow registered customers to access the system.	
Task 2 - A form-based page which showcases in a visually attractive manner forthcoming TLDs and allows the customer to record an interest.	
Task 2 - A form-based registration page for collecting information from new customers.	
Task 2 - A status page which shows the TLDs that a customer has expressed interest in and their release dates, prices etc.	
Task 2 - Annotated screen shots of CSS theme mirroring Fasthost's branding	
Task 2 - Annotated screen shots of an alternative CSS theme to Fasthost's branding.	
Task 2: A report on additional CSS themes which could enhance user experience including an evaluation of the options as to their effectiveness.	

Task 3 – An annotated copy of JavaScript with explanation of how it adds interactive elements	
Task 2 – Assessor confirmation that the Client-side JavaScript has been used to add interactive elements to the website.	
Task 3 – A report on the choice of tests to be carried out in the test plan.	
Task 3 – A copy of the Test plan with before and after screenshots of extensive testing including debugging of software.	
Task 3 – Annotated screen shot of validation provided through the use of complex JavaScript functions.	
Task 3 – Assessor Confirmation that the learners has created and tested the elements of the website as identified	
Task – 4 A report on the research carried out to identify a complex task	
Task 4 – A report on the research carried out to identify a JavaScript third party library function which will carry out the complex task.	
Task 4 – Annotated Screen shots of the JavaScript	
Task 4 – Assessor confirmation that the learner has selected a complex task and third party Java Script and that the chosen function works correctly.	
Task 4 – Annotated Screen shots of the JavaScript carrying out the task.	
Task 5 – Review document on the server-side requirements of the website containing evidence of the rationale for the use of dynamic content.	
Task 5 – Annotated screenshots of the dynamic content created using server-side scripting elements.	
Task 5 – A report on the identification of tasks which require either a bespoke server-side scripted class or a bespoke scripted function to enable it to be carried out.	
Task 5 – Annotated screen shots of the scripted class and s cripted function demonstrating both the scripting but also before and after evidence of its effective use.	
Task 5 – A short report on the need for server-side scripting to produce a query on a relational database.	
Task 5 - Annotated copies of the script and screenshots of the query being used and the results.	
Task 5 – Assessor confirmation that the scripting was undertaken by the learner and that the outcomes were successful.	
Task 6 – A report on the rationale for adding server-side validation and processing.	
Task 6 – Learner confirmation of the choice of scripting language to be used.	
Task 6 – Annotated Screenshots of the scripts and the resulting validation and processing.	
Task 7 – A research report on common client side and server side threats and measures which will mitigate or remove them.	
Task 7 – A presentation with detailed speaker notes on four server side and four client side threats most likely to affect the website with the measures which will prevent or mitigate these threats	
Task 7 - annotated screen shots of the measures being implemented	
Task 7 – a detailed test plan	
Task 7 – a completed test plan with appropriate screen shots.	
Task 7 – Assessor witness testimony that all measures were correctly installed and successfully protected the website from the identified threats.	
Task 7 - A report on the threat analysis carried out to identify the most damaging of attack vectors.	
Learner - please confirm that you have proofread your submission	

Learner Authentication

I confirm that the work and/or the evidence I have submitted for this assignment is my own. I have referenced any sources in my evidence (such as websites, text books). I understand that if I don't do this, it will be considered as a deliberate deception and action will be taken.

Learner Signature

Date

Tutor declaration

I confirm the learner's work was conducted independently and under the conditions laid out by the specification. I have authenticated the learner's work and am satisfied that the work produced is solely that of the learner.

Tutor/Assessor Signature*

Date

*Please record any assistance given to the learner beyond the group as a whole even if within the parameters of the specification

For marking purposes only

Marking grid

Performance Criteria (PC) achieved								
Pass	1 st submission ✓ / X*	Resubmission ✓ / X*	Merit **	1 st submission ✓ / X*	Resubmission ✓ / X*	Distinction**	1 st submission ✓ / X*	Resubmission ✓ / X*

Assignment Result

	✓ / X*
Not yet passed	
Pass	
Merit	
Distinction	

*Achieved (✓) Not achieved (X)

**Distinction and Merit criteria can be achieved only where the associated Merit and Pass criteria have been achieved first. Learners must achieve all the PCs relevant to a grade before they can be given that grade for the assignment.

Tutor summative feedback for learner

(Note to tutors: this section should focus on what the learner has done well. Where a learner has not achieved a specific performance criterion or is likely to want to improve on a response to a performance criterion, then you may identify the issues related to the criterion, but should not provide explicit instructions on how the learner can improve their work to achieve the outstanding criteria.)

Feedback

Tutor name(print) and date

Resubmission Feedback

Tutor name(print) and date

Scenario:

Fasthosts launches new TLDs (Top Level Domains) on a regular basis and you are working for them as a Junior Developer. As a Junior Developer, you are required to design, create and deploy a standalone website that displays:

- the schedule of new TLD releases,
- collect information from potential new customers so that they can be informed when the TLDs they are interested in become available

Clients will need to be able to:

- register on the site
- record an interest in a particular TLD
- search for specific TLD using key words

The organisation needs to be able to:

- identify a customer's expression of interest in the release date, prices, etc.

Before starting to build the website you are required to demonstrate that you have a good understanding of web technologies and their relevant strengths and weaknesses.

Task 1:

Task Overview:

- **PO1: Understand the key features of website technologies** (P1, P2, M1, D1)

Note: This task will provide learners with the opportunity to present evidence for the transferable skill research.

The following link will take you to the relevant section of the AQA website for transferable skills:

<http://www.aqa.org.uk/tech-levels/transferable-skills/research> . By completing the relevant documentation for the research transferable skill (attached to this assignment brief), learners will also be providing evidence for the Unit 1: AO1, AO2 and AO3 at the same time.

You are required demonstrate your understanding of web-technologies and their strengths and weaknesses in different given situations. Your manager has asked you to submit a report on your research and findings to enable him to assess your ability to carry out the project.

You will need to:

- Conduct research on:
 - the four technologies that enable web technologies to function
 - compare and contrast five different types of available website technologies
 - describe the main characteristics and properties of the technologies investigated
- When conducting your research you must:
 - identify the aims and objectives of your research

- plan and carry out the research activities to meet the aims and objectives
 - record the sources which inform your research and develop a detailed bibliography
 - identify strong examples for and against different web technologies
 - weigh up how important market share and web standards are to the selection of the most appropriate web technology
 - analyse your findings to select the most appropriate technologies for your project
 - justify your decisions
- Prepare a presentation of at least ten minutes duration, with detailed speaker notes for your manager containing:
 - the research you conducted
 - the results of your research
 - selection of the most appropriate technology with justification
 - your conclusions
 - your bibliography of sources

Your evidence must include:

- Research notes highlighting positive and negative features and findings.
- A detailed presentation with speaker notes and references to research sources.
- Assessor observation record of delivery of presentation.

Note: This task will provide learners with the opportunity to present evidence for the transferable skill research.

The following link will take you to the relevant section of the AQA website for transferable skills:

<http://www.aqa.org.uk/tech-levels/transferable-skills/research> .

Evidence for recording the transferable skills of research is outlined at the end of this assignment brief.

Task 2:

- **PO2: Demonstrate key features and functions of a mark-up language** (P3, M2, D2, P4, M3)
- **PO3: Demonstrate key features of a style sheet language** (P5, M4, D3, P6, M5)

Your presentation confirmed your ability and you are now required to design, create and deploy a modern, dynamic multi-page website for Fasthosts to advertise their forthcoming TLDs and collect potential customer information.

You will need to:

- Ensure your design:
 - uses suitable media and HTML5 features
 - reflects your assessment and evaluation of opportunities provided by HTML forms to the website developer
- Create the following:
 - a form-based registration page for collecting information from new customers
 - a login page to allow registered customers to access the system
 - a form-based page which showcases in a visually attractive manner forthcoming TLDs and allows the customer to record an interest
 - the ability to search for TLDs by keyword
 - a status page which shows the TLDs that a customer has expressed interest in and their release dates, prices etc.
 - comprehensive CSS themes developed specifically for the website to format the web pages

- two initial, specific themes:
 - one which mirrors Fasthost's established branding and
 - another which provides a suitable alternative
- Identify opportunities for additional themes which could enhance the user experience and evaluate their potential.

You must ensure that:

- cross-browser rendering issues are identified and accommodated, using appropriate style sheet content, where possible
- opportunities for additional themes which may be added to enhance the user experience are evaluated
- you carry out extensive debugging and testing to ensure that all elements of the website work correctly
- all testing and debugging is accurately recorded and documented in line with Fasthosts pre-release checks

Your evidence must include:

- A form-based registration page for collecting information from new customers (evidence could be supported by video recordings, annotated screenshots).
- A form-based registration page for collecting information from new customers.
- A form-based page which showcases in a visually attractive manner forthcoming TLDs and allows the customer to record an interest. This could be the actual page, a video of the page being used or annotated screen shots.
- A form-based registration page for collecting information from new customers. This could be the actual page, a video of the page being used or annotated screen shots.
- A status page which shows the TLDs that a customer has expressed interest in and their release dates, prices etc.
- Annotated screen shots of CSS theme mirroring Fasthost's branding
- Annotated screen shots of an alternative CSS theme to Fasthost's branding.
- A report on additional CSS themes which could enhance user experience including an evaluation of the options as to their effectiveness.

Task 3:

- **PO4: Demonstrate the key features and functions of a client-side scripting language (P7, P8, P9, M6)**

Your manager is very pleased with your progress with the project and has given you permission to move on to the client-side scripting tasks.

You will need to:

- Create:
 - interactive elements for your website using JavaScript
 - JavaScript validation to the form-based content
 - a test plan
 - a JavaScript function to perform a complex task that you have identified
- Identify a complex task which could be resolved by the creation of a JavaScript function to perform the task.

- Test and debug all of the code you have produced using debugging facilities where appropriate.

Your evidence must include:

- An annotated copy of JavaScript with explanation of how it adds interactive elements
- Assessor confirmation that the Client-side JavaScript has been used to add interactive elements to the website.
- A report on the choice of tests to be carried out in the test plan.
- A copy of the Test plan with before and after screenshots of extensive testing including debugging of software.
- An annotated screen shot of validation provided through the use of complex JavaScript functions.
- Assessor Confirmation that the learners has created and tested the elements of the website as discussed else

Task 4:

- **PO4: Demonstrate the key features and functions of a client-side scripting language (M7)**

Your manager continues to be pleased with the work being produced but has suggested that rather than write all of the JavaScript for yourself that you could consider using a third party JavaScript library function to perform one of the complex tasks you need to work on.

You will need to:

- Identify complex tasks you have outstanding and decide which one would benefit from a library function rather than sitting and writing the code out yourself
- Research available JavaScript third party libraries including their costs, whether they have the range of required functions, availability of free access and usage
- Use the library function to perform the selected task

Your evidence must include:

- A report of your identification and selection of an appropriate complex task for the website.
- A report on available third party JavaScript libraries, your analysis of their accessibility, costs, constraints, etc and your final conclusion which will identify your choice and your justification.
- Annotated screenshots of the JavaScript within the code and of the actions it carries out.
- Assessor confirmation that the learner has selected both the task and the library and that the embedded function works as planned.

Task 5:

- **PO5: Demonstrate the key features and functions of a server-side scripting language (P10, P11, M9, P12. P13)**

Having set up the client-side scripting requirements, you have now received permission to move to the server-side and identify opportunities to enhance that side of the website.

You will need to:

- Identify server-side scripting opportunities to add dynamic content to the website.

- Create the script, using an appropriate language for the computer system
- Identify tasks which would require bespoke server-side scripting and select:
 - A task which requires a scripted function to resolve it
 - A task which requires a bespoke server-side scripted class to resolve it
- Produce the scripts for the function and class
- Create a server-side script to query data in the relational database which holds the TLD data.
- Create server side scripts to manipulate the data in the database

Your evidence must include:

- A report on the need for server-side scripting in relation to adding dynamic content, analysis of possible options and a clear conclusion on the purpose of the script elements identified.
- Annotated screen shots of the dynamic content created using the script.
- A report on the identification of task requiring bespoke server-side scripted functions or classes and a rationale for the selection you have made.
- Annotated screen shots of the bespoke scripts and how they have improved the website.
- A report on the need for server-side scripting to produce a query on the relational database and analysis of the option resulting in a decision on which query or queries are to be created.
- Annotated screenshots of the code and outcomes of the queries created.
- Confirmation from the assessor that the work is your own.

Task 6:

- **PO5: Demonstrate the key features and functions of a server-side scripting language (M8)**

Your manager has been reading his copy of the BCS journal which highlights the danger of poor validation and processing of form based content and recommending that these activities should also occur on the Server-side.

You need to:

- Gather information on a rationale for adding validation and processing to its form-based content on to the server-side.
- Select the appropriate scripting language.
- Create the necessary functionality to enable validation and processing.

Your evidence must include:

- A report on the rationale for server-side validation and processing and form-based content and selecting an appropriate scripting language.
- Screen shots of the code created, before and after annotated screen shots of the activities carried out by the script.

Task 7:

- **PO6: Recognise vulnerabilities and counter threats to website technologies** (P14, M10, P15, M11, D4)

Your manager has confirmed that the website meets his requirements but he is still concerned about the security of both the website and the data, as he put it, “I don’t want to be all over the news as yet another IT security failure!” After a discussion, it has been agreed that you will identify four of the most common server-side and four of the most common client-side threats which could have an impact on the website. He also asks that you carry out a threat analysis on

You will need to:

- Demonstrate that you have researched the most common threats that could affect your website from both server and client side.
- Select the four server-side and four client-side threats most likely to threaten your website.
- Select appropriate software and/hardware measures to protect against the threats.
- Implement the measures
- Create a test plan for each measure.
- Test and debug the implementations.
- Prepare and carry out a threat analysis on the website.
- Use the results of the threat analysis to identify the most damaging attack vectors.

Your evidence must include:

- Your evidence for planning and carrying out your research on threats.
- Your report including:
 - your research findings,
 - your interpretation of the findings,
 - your justification for your final choice of threats to be addressed,
 - the measures which you will take to mitigate these threats.
- Annotated screen shots of the installing of the selected measures.
- A test plan covering all measures.
- A copy of the completed plan with screen shots.
- Your assessor witness testimony on your implementation and testing of the measures.
- The preparation notes and research carried to inform your threat analysis.
- The findings of your threat analysis.
- A report to identify the most damaging attack vectors based upon the findings of the threat analysis.

Transferable Skill - Research

PLAN (1)
(to be completed by the learner)

R1 Design a research study

Identify your chosen area of research.

Identify the different resources (at least three) you will use to gather the relevant information and to carry out the research. ONE of these must be a primary resource, eg, interview, questionnaire, survey, rather than from a secondary resource eg encyclopaedia, interpretations of original material.

Witness/assessor	
Candidate name	Date:

Transferable Skill - Research

DO (2)

(to be completed by the assessor)

R2 Conduct data collection and analysis

Did the learner collect data using the appropriate methods, eg, at least three different types of resource, where ONE must be a primary resource, eg, interview, questionnaire, survey, rather than from a secondary resource eg encyclopaedia, interpretations of original material?

Yes/No

Did the learner carry out an appropriate analysis of the data?

Yes/No

Did the learner draw appropriate conclusions that are supported by the evidence from the data analysis?

Yes/No

Witness/assessor	
Candidate name	Date:

REVIEW (3)

(to be completed by the assessor)

R3 Present findings of the research and evaluate the research activities

Did the learner prepare the results of the research?

Yes/No

Did the learner present the information in a clear and appropriate format adapted to the needs of the audience?

Yes/No

Did the learner seek feedback and use it to support own evaluation of research skills?

Yes/No

Witness/assessor	
Candidate name	Date: