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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

GCSE Information and Communication Technology 3521 Full and Short Course

Specification A

3521/P Project

Report on the Examination

2008 examination - June series

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Project

For full GCSE course certification, for the coursework requirement candidates need to complete the equally weighted AQA set Assignment plus this component.

On the project component in this specification, candidates are required to submit a report on an investigation into a problem and the implementation of its solution; the solution should comprise a re-usable system in which the flow of data and links between the various components are clearly documented in each section. Is the need established and are the jobs that have to be done understood by the candidate? We need to see the solution doing the jobs for the scenario if they are to get the highest marks.

Initial discussions between the teacher and candidate will play an important role in the choice of project to be undertaken and the eventual method of solution to be used, and account must be taken of the ability and needs of the individual candidate. Experience of this component suggests that evidence shows candidates selecting a problem of interest, which they can genuinely research and understand, gives them the opportunity to achieve better results than those directed on to a set problem, although the final choice should be after negotiation between the candidate and their teacher. At the higher levels, it is important that candidates tackle a problem that is enough to provide them with necessary *breadth and depth* to achieve the higher marks but do not take on the solution to a problem that will be unachievable in the time available. Interests, hobbies, part time jobs and relation to work experience placements are a good starting point.

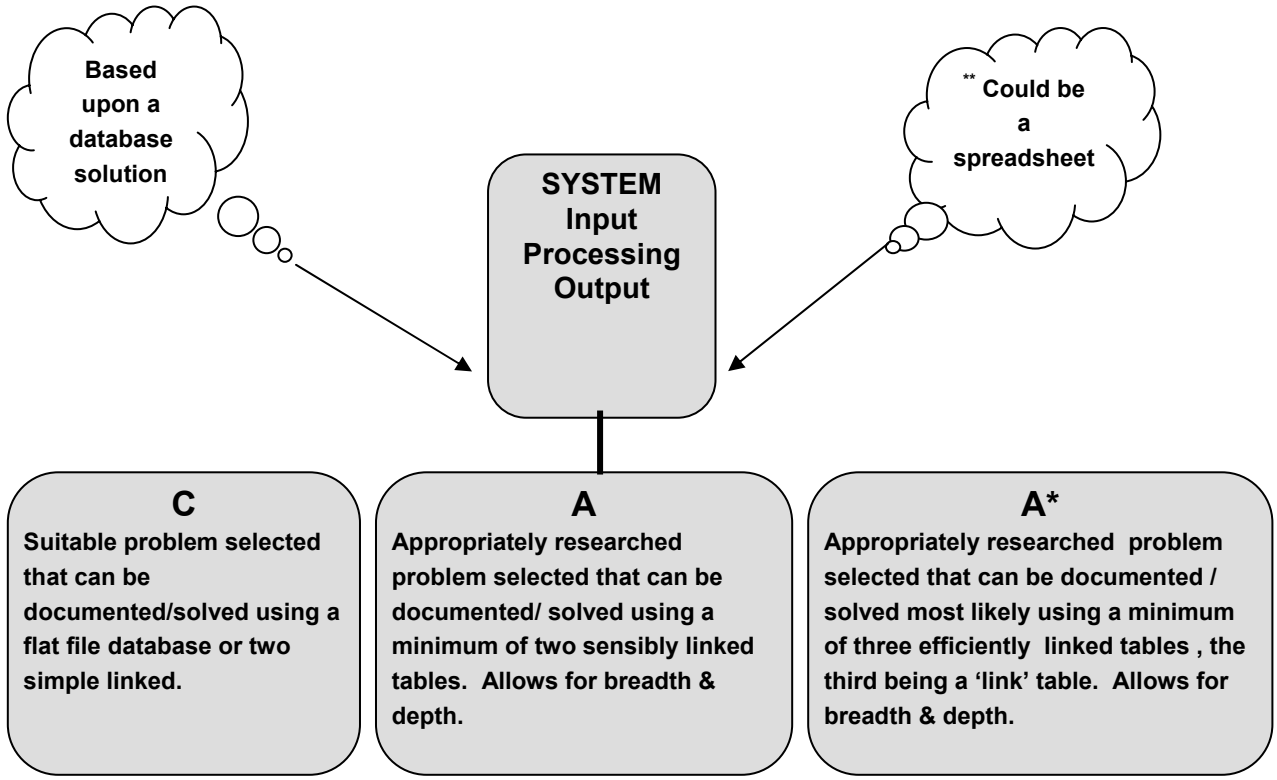
Unlike the task based approach for the Assignment, candidates should, depending upon their ability, be producing a *holistic system* which should consider the ***input, processing and output requirements*** of the problem to be defined. In this context it is therefore recommended that all the documentation for each section from analysis through to completion of the user guide is holistically addressed.

When considering the choice of problem to be undertaken, candidates should be having initial thoughts about how they will eventually produce their solution. Whilst final justification of their software choices will not appear in their documentation until the design section, how they will approach the solution to their defined problem is a major consideration. Will it allow the necessary breadth and depth? The introduction and more widespread use of powerful database and spreadsheet packages has offered greater opportunity to show the system requirement using just one package and it is strongly recommended that where possible this approach is used.

In so doing, candidates can improve and further develop their skills. It should, however, be borne in mind that this is a GCSE component and the assessment criteria is used on that basis, but it also offers the opportunity for candidates to gain the necessary skills to have a solid preparation for higher study in ICT.

Once the topic has been agreed, by outlining a detailed scenario at the beginning, candidate(s) would have every opportunity to reach the higher bands in the marking criteria, outlining the actual problem rather than any task driven assignment such as the AQA set Assignment. It should be remembered that unlike the AQA Assignment in which candidates have only to list the required tasks, in the project the sub problems should arise from the initial exploration of what the actual problem is. Hence the scenario at the beginning must, especially for the higher mark bands on the analysis, give sufficient detail to generate the problem and its sub problems. If this detail is not included then the 'problem' effectively becomes just listing tasks. It is likely that this scenario, for the higher awards, will consist of several pages.

The list below shows examples where successful projects were in evidence centred around a single package:



Project ideas:-

Bookings or stock control*:*

- Video rental
- Take away food outlet
- Hair beauty salon
- Online CD/DVD shop
- Ticket bookings
- Driving school
- Newsagent
- Theatre
- Warehouse

Sales:

- Car sales
- Estate agency

Club membership:

- Health/leisure
- Sports
- Hobby

School events:

- School trip
- Concert
- Prom
- Presentation evening
- Open day
- Parents' evening
- Work placement

Financial:

- Telephone tariff
- Simple payroll for a small business

Analysis

Analysis work submitted showed improvement on previous series although there are still a number of clearly more able candidates who did not take sufficient time to consider significant aspects of the problem. Candidates need to define a problem that can be solved using IT; in a number of cases a typical definition of the problem still was immediately to state that a database would be used to solve the problem rather than looking at the requirements of the problem itself.

More candidates adopted a 'systems' approach to the project, selecting a genuine problem they could relate to and research. There was certainly further evidence to show that candidates were planning their work, not just to the extent of the current section but additionally thinking about the requirements of the other components to follow.

The problems need to come out of the analysis and some centres were able to encourage candidates to do exactly this. Each problem needs to be broken down into sub-problems. The better work showed that the candidate had an appreciation of the audience and the uses of the solution they developed and these candidates did explore the problem and only eventually came to a conclusion as to the precise nature of the issues involved. Less able candidates tended to reach conclusions about the problems much sooner. It was not uncommon to find the whole analysis taking no more than a couple of sides of A4 paper. This volume of work is not sufficient for a full analysis and consequently would not be highly marked.

One area showing further improvement was the links between sub problems; links were explored more meaningfully this year; links were identified between defined sub problems, a common one being the aims of linking a central storage system to letters etc to be produced from that central system. Marks were much more limited in this and other areas where candidates identified booklets, websites etc. with no links, and whilst this may be appropriate for less able candidates, they would not offer the opportunity to achieve the middle to higher awards.

Re-usability continues to be an area where candidates could make improvements to their work; many candidates included a heading for this section but included little evidence as to the impact on the input, processing and output involving new and redundant data ('the impact of change over time'); often this was limited to a statement such as 'a database is re-usable every day'. Much better examples were seen where candidates were incorporating their re-usability work in to their overall documentation, clearly recognising which aspects were re-usable over time. It should be remembered that for this part of the component, re-usability only begins to gain credit in the 7-9 marking band, so any relevant evidence in the presentation, no matter how minimal, relating to this aspect must achieve an award of 7.

Many candidates used their previous Assignment knowledge related to desired outcomes and performance criteria to produce reasonably detailed components on this requirement which could then be used to evaluate their systems during the remainder of the coursework. For higher awards, this requirement is not about producing just a large list of desired outcomes and performance criteria but ones that can be used in the evaluation section to fully measure the success of their solution.

Design

Design sections showed improvement in many cases this year, particularly relating to the use of databases, both flat file and relational, although there is still a need to give more consideration to the information requirements rather than the way candidates would chose to solve the sub-

problems. Candidates need to fully explore the possible systems that could provide solutions, and justify the choices they made.

Apart from what constitutes re-usability, the overall improvements in design areas such as plans etc. appear to have got through to the candidates, thus enabling them to produce plans that could be actually built by a third party. They need to identify the techniques that they feel are most appropriate and use the software tools appropriately. Candidates need to keep in mind their analysis and constantly refer to the problem being solved rather than just produce generic lists. If they have identified effective performance criteria they are more likely to produce evidence that can be seen as a good solution to the problem. They will attempt to link the various parts of the problem where this is appropriate and address which parts can be re-used and how. If the system is analysed from the point of reuse then the design should reflect that. How is the solution designed to handle the transactions that the scenario requires?

If only one package is to be used the design must reflect complex usage e.g. queries, reports, mail merge, etc. depending upon the package being used.

An additional requirement of the marking criteria in this section is the test plan. Candidates should indicate what is being tested and why, with the test plan being designed to show how well the system responds to the information handling/processing required by the scenario. For higher mark awards, candidates need to create comprehensive test plans (a range of tests over the breadth of the project) to additionally allow for erroneous and extreme data sets together with relevant validation testing. There are still centres entering candidates who take the 'comprehensive' definition as producing evidence to test every part of the system resulting in test plans that end up with between a hundred and two hundred tests, many being repetitive; this is not what is required.

Test plans were, however, generally much improved although there is still room for more progress in this area. The lack of use of extreme and erroneous data was not considered by some more able candidates, and this would restrict awards that could be made in the testing section itself; in other cases database testing was too general. Many did repetitive tests of buttons and queries, ignoring validation, masks etc. In a similar vein, it was also noticeable that fewer candidates made use of AND and OR searches but nearly always searched on a single field with a single criterion. For higher awards lots of system tests (adding, amending, deleting etc.) would not enhance the awards in this section.

Implementation

Implementation continues to be done well by many centres, although there were many instances of high marks awarded where candidates had produced solutions to what were simple tasks or incorrect solutions. It is here where the report should really come into play, with the candidates clearly indicating the levels of skill, knowledge and understanding of the software tools that are being used to achieve the solution. It should additionally be remembered that efficient and complex use of one package systems is required, which currently are not always being displayed to sufficient depth. There are some issues affecting candidates who do not annotate and explain their work well. These candidates risk having their mark adjusted because there is not enough evidence for the award of the skill level. It must be noted that moderators may not be familiar with the particular software being used, so they need the candidate to annotate the work in order to be able to make a judgement. Production of evidence is not just printouts of the answer, nor is it just lots of screenshots. It is a mixture of the two. Candidates should be reminded that they are producing a report into their solution that shows evidence of levels of skill etc. They have to convince a third party that they really do know and understand what they are doing.

More 'one package' solutions were evidenced this year, with some candidates producing excellent work; more candidates were producing well annotated, screen dumped solutions that showed the structure of their solutions well. Verifiable evidence for the moderator is required to include full database printouts that will allow verification of such as what a search should produce, print outs of results of queries that can be verified and complete formulae print outs of a spreadsheet including the cell headings.

Modifications as a result of testing (if required) were still rare. This was probably because of the very limited testing that some candidates undertook. Candidates who scored high marks generally recognised the links between various parts of their solution. They moved data around where appropriate, and where possible, identified advantages to the user in not duplicating material. They produced not only good solutions but also efficient solutions where the power of the software and of the particular systems used was most effective.

Testing

Whilst improving, much more detail is still required on this component and candidates need to be taught how to test and how to set up testing plans. The testing plan, which can be copied and pasted from the design stage, would identify how the developed solution would be used and would identify typical data. This test data would be entered into the system to check the functionality and correctness. Candidates would document this fully, giving screen shots with annotation where appropriate, to show that the testing had been carried out and then to show typical outputs. Modifications would also be documented. Erroneous data would be entered and the outputs compared against stated expected results. Extreme data would also form part of the testing. The candidates would comment on the output from this testing and say how they would alter their system to deal with such input

On the work presented, the testing section showed improvement although the notion of 'a range of tests on a range of fields' passes those candidates by and a tendency is made to focus on repetitive tests which are very much alike and do not show how well the system works. Sometimes these do little more than checking as would be required in the set Assignment.

Test plans were also improved with more and more candidates supplying evidence to support the tests, albeit it limited in terms of data other than normal (a requirement to achieve awards in the top two boxes of the mark criteria). Some test statements seen were of a vague and general nature, often just relating to repetitive testing of buttons and queries, ignoring validation, masks, etc.

Evaluation

Evaluations are very good where candidates have identified performance criteria in the analysis section for the whole system. If these are used to identify how well the solution solves the problem, then it is relatively easy to gain high marks. However some candidates are not using these performance criteria. Evaluations must relate directly to the holistic nature of the problem initially identified. If the problem is in fact a set of tasks, then candidates will find this process difficult, if not impossible. All they can report is that they succeeded in completing the task. Unfortunately they do not in these circumstances, evaluate the solution, and so gain little credit.

It was disappointing to note that a large number of candidates of obvious ability included a copy of the desired outcomes and performance criteria and included little else other than a statement

to the effect that they had done them. Whilst there were some good reviews, the effectiveness was not well understood nor was there much evidence of description or discussion as required in the mark criteria.

5 marks: discussion	[equates to 9 –10 in the set Assignment]
3 marks: indicates HOW they have done it	[equates to 5 – 6 in the set Assignment]
2 marks: indicates they have done it	[equates to 3 – 4 in the set Assignment]

User Guide

User-guides are often full and detailed and they offer one of the main vehicles for describing the reusability of the solution. The user-guide needs to be divided into sections and better guides will include formatting techniques e.g. table of contents, index, footnotes etc. together with the use of screen dumps to provide evidence to support the user. Candidates must avoid the temptation to produce a software manual. This is not what is required. The assumption can be made that the end-user can use the software (as indicated in the implementation section), and therefore the user guide should inform the user how to use the built system to do the required jobs.

The list below indicates the areas candidates should include in their guides:

- Show how to install the system
- Show how to produce at least two different ways of inputting data (or into at least two different tables / files) but is not clearly presented e. g. direct entry to a table, using a form or specialist field [drop down list]
- Show how to produce at least two output stages but is not clearly presented e. g. formatted print out, report, mail merge
- Include at least on example of data being amended in the system but is not clearly presented e. g. data in a field being updated
- Include at least one example of data being deleted from the system but is not clearly presented e. g. a record being deleted directly from a table / use of a command button to delete a record
- Include at least one simple piece of help advice (which may refer to the above) but is not clearly presented
- Format could include a contents / index page and / or page numbering but is not clearly presented.

Additionally, some consideration will need to be given to the presentation, spelling, punctuation and grammar.

The above list shown in the User Guide requirements has been part of the development of work on the specification to not only clarify aspects of the marking criteria but also to support candidates and teachers in the delivery and production of the component requirement. There is now available a document looking at a benchmark requirement for both grade A and C requirements, including a specimen project; a copy of these documents can be obtained from AQA or the centre allocated coursework adviser.

Administration matters

There is a need for centres to:

- internally standardise. If this is not done then students risk having downward adjustments applied because of the inaccurate marking of one teacher on one set of students' work
- ensure that a different moderator is allocated from the Assignment component, full paperwork for the required component is forwarded to each moderator
- ensure that paperwork has been completed as per the specification, as delays are inevitable if the correct documentation is not provided
- remove work from bulky folders before posting to the moderator
- ensure that, if plastic wallets are used, all the work is visible without the moderator having to remove it from the wallets
- inform AQA if the work is likely to be delayed (several centres were very late in despatching the work to the moderator)
- annotate the work as required by the specification. Teachers must show why they have awarded the marks. They potentially disadvantage their candidates by not doing this.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results Statistics** page of the AQA Website.