Modelling of distance education forum: Formal languages as interpretation methodology of messages in asynchronous text-based discussion

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Abstract

This article presents a study carried out in the area of distance learning electronic forums. Based on the relevant bibliographic review, electronic forums are increasingly becoming part of the learning process. The specific study was stimulated by previous works relevant to the modelling of the behaviour of IT students at Hellenic Open University (HOU) and addresses the issue of distance learning forum modelling using a formal language, aiming to fill the gap that exists in this area, which is demonstrated by the relevant bibliographic review.

For this purpose: (a) a relevant note was submitted to HOU’s forums, (b) the main concepts of formal languages were specified, (c) a formal language was created which was specified using mathematical terms and represents the messages of HOU’s forum, (d) the correctness of such language was verified using specific examples of its function, (e) a language syntactic check algorithm was designed, (f) the parameters impacting on the effectiveness of a distance learning forum were determined, (g) concepts such as time, group size and volume of information were incorporated into the language and (h) efforts were made to identify the factors impacting on the effectiveness of a distance learning forum and the following concepts were incorporated: time, group size and volume of information, in the language.

1. Introduction

Distance education is a framework for teaching and learning whose main characteristic, is that the student is taught and instructed without the physical presence of a tutor in a teaching classroom, based on a special, tutorially designed learning material and on his/her communication with the tutor. Although at some distance from the tutor (space and time-wise), the student is instructed and encouraged by the tutor through some form of communication with him.

The quality of distance education relies mainly on learning material design and quality as well as on the quality of communication (in a broad sense) between the student, on the one hand, and the tutor and the educational institution, on the other hand. These writers also note that “improving the quality of teaching and learning is the main handbook, indicated by almost every institution, for the development of managed learning environments. The student’s experience is enriched through improved delivery of the educational material and advance notice of courses, improved access to learning resources and better communication”. Therefore, the notion of communication is crucial to distance education.

Among the aims of the communication between the student and the tutor are: (a) to resolve any queries, (b) to assess the student through assignments the student has to carry out, and (c) to encourage the student. This last point is very important as in distance education the student would often feel isolated. The student may become disheartened by difficulties encountered in the learning process and which may lead to a slowdown and/or quitting his/her studies. Student encouragement and support are a primary concern of a good, modern programme of distance study.

In connection with the foregoing, the use of web-based asynchronous distance education seems to be important according to a number of writers such as Plagemann and Goebel (1999), Wolverton and Wolverton (2002), and Yung (2004). Web-based asynchronous education services include services that can be used (much) later than the time produced. They provide a “learner-centred” model enabling students to find their own pace and investigate the material at any desired depth.
In recent years, there has been a significant number of educational institutions, as well as companies, using web-based asynchronous education services. The increased popularity of the world-wide web has stimulated experiments in new asynchronous education services. An important communication tool is the electronic forum, or e-forum, which will be called forum (plural forums) hereinafter.

This paper presents research approaches about the forums, presented below. The aim of this paper is to model distance learning forums using a formal language to aid their understanding, that is, to have a formal description leading to quantifiable data. For the application of the language was used the HOU (Hellenic Open University) forums infrastructure. Up to now, quantifiable data involved measurable aspects of various parameters such as: time, group size and volume of information (e.g. posts, student, tutor responses, tutor response rate, etc.); relative attempts have been made to systematically map highly sophisticated variables in on-line forums, starting from the work of Henri (1992) and through to the present, such as Collison, Erlbaum, Haavind, and Tinker (2000), Garrison, Anderson, and Archer (2000), Howell-Richardson and Mellor (1996), Har, Bonk, and Angeli (2000), Knese, Pilkington, and Treasure-Jones (2001), Lipponen, Hakkakainen, and Paavola (2004), Newman, Johnson, Webb, and Cochrane (1997), Rourke, Anderson, Archer, and Garrison (2001), Schrire (2006) and others.

The innovation of this paper consists in developing a formal language defined in mathematical terms (in other words, a language that has an alphabet for terminals, an alphabet for non-terminals, a grammar and a symbol each sentence in the language is generated from) to represent messages in forums. This language was tested for its proper function in being able to represent most common cases of messages and has been found to meet such requirements. Moreover, a language parsing check algorithm was designed to demonstrate that the language can function in a programming environment and can be further developed for use by machines. Subsequently, an attempt was made to define parameters impacting on the effectiveness of a distance learning forum by incorporating into the language concepts such as: time, group size and volume of information. Finally, future work is introduced as to how the language could be developed in a programming environment and find its way to practical applications, and some points for further investigation and ideas for future projects were pointed out.

It follows from the above that the specific language proposed is to be used to aid the understanding of forums used for distance learning, to improve data processing and analysis in identifying best practices and erroneous patterns of behaviour, the ultimate aim being to improve the learning primarily at other educational institutions providing distance learning.

This paper is organised as follows: Section 2 presents some distance learning studies of relevance to forums, demonstrating this paper’s contribution. Section 3 describes HOU forums and their contribution to the learning process. Section 4 is an overview of key concepts such as Formal Language, Alphabet, Vocabulary and Grammar. Section 5 presents the language which has been developed. Finally, Section 6 presents the conclusions and related open problems for further research.

2. Literature review


Indicatively in the work of Ravenscroft and Matheson (2001), the authors argue that developments in e-learning dialogue should be predicated on pedagogically sound principles of discourse, and therefore, by implication, they need to develop methodologies which transpose (typically informal) models of educational dialogue into cognitive tools.

Another relevant work is the work of Ravenscroft and Matheson (2001). The authors argue that developments in e-learning dialogue should be predicated on pedagogically sound principles of discourse, and therefore, by implication, they need to develop methodologies which transpose (typically informal) models of educational dialogue into cognitive tools.

A case study by Soong et al. (2001), was used to evaluate hypotheses on the critical success factors for on-line course resources in a tertiary setting. The evolution of educational media and methods leading up to the usage of such resources are also briefly discussed. The findings show that in order for on-line course resources (such as discussion forums) to be used (as compared to implemented) successfully, the critical factors that need to be considered are: human factors pertaining to the instructors; the instructors’ and students’ technical competency; the instructors’ and students’ mindset (about learning); the level of collaboration intrinsic in the course; and the level of perceived IT infrastructure and technical support.

Chang (2003) argues that “after the system database contains an accumulation of discussion messages with date tagged from different classes within a course, an instructor may want to have an overview of learners’ discussions, such as the top ten hot topics, without reading every message in the learning forum. Hence, it is necessary to model the relationships between discussion messages during a specific time interval for showing the major discussion topics. Consequently, an instructor can use the information to refine his/her teaching strategies in the classroom or virtual classroom”.

In the work of Mazzolini and Maddison (2003), who found that “the ways in which instructors post to forums can influence students’ forum discussions and perceptions, but not always in expected ways. On average, frequent posting by instructors did not lead to more student postings, and the more the instructors posted, the shorter were the lengths of the discussions overall. On the other hand, while most students rated their educational experience highly, instructors who posted frequently were judged on average to be more enthusiastic and expert than those who did not. Clearly the number of student postings and the rate at which instructors participate are not simple indicators of the quality of forum discussions”.

Chiang and Fung (2004), point out that “Support is needed to promote problem-based learning (PBL) and to enhance critical thinking skills in discussion-based Internet forums” and that “by advancing the capabilities of chat room and forum software, problem-based discussions for learning can be supported further in on-line learning environments”.

In a similar work, Licchelli et al. (2004) argues that “the main issue in e-learning is student modelling, i.e. the analysis of a student’s behaviour and prediction of his/her future behaviour and learning performance”.

The aim of the work by Lewinson (2005) is to study “the preliminary findings – of a large scale study – of the different ways in which the asynchronous discussion forum (ADF) is being used in the on-line learning environment”. This work shows the structural and functional variation of ADF within a framework of institutional and instructional models. Epistemological comparisons are made concerning the role of the tutor, student requirements and the assessment of student learning.

The aim of the work of Dringus and Ellis (2005) is to show “how data mining may offer promise as a strategy for discovering and building alternative representations for the data underlying asynchronous discussion forums”. This work seeks to intersect the information (i.e., participation indicators) an instructor may wish to extract from the forum with viewable and useful information that the system could produce from the instructor’s query. Temporal participation indicators are used to show how using data and text mining techniques in the query process could improve the instructor’s ability to evaluate the progress of a threaded discussion.

All works presented – indicatively – in this section, show the important role of forums in distance education and, in essence, note the fact that forums are increasingly becoming part of the distance learning process. However, there appears to be a gap in their modelling for distance learning and, moreover, there is a need to develop a method that will support a disciplined (structured) mode of discussion in a distance learning forum while taking into account factors which impact on their effectiveness by incorporating concepts like time, group size and information volume which are the most common according to the conducted literature review.

3. Case description

The language that is presented in this paper was checked in the HOU forums. The HOU is a distance university that currently offers education to 27,086 students, which attend 226 thematic units, organized in 1.303 groups assigned to 1,262 tutors.

HOU forums make a significant contribution to the learning process as they help with organizing the study of a module and the processing of and elaboration on what learners have already studied. More specifically, as regards the organizing of studies during a thematic unit, HOU forums can be used as a channel of communication between tutor and learners (regularity of contact, subject matter, solution to “technical” problems, etc.). Also, in organizing home study content (method of use of learning material and development of activities, utilisation of literature and parallel sources of information, time schedule, problem solving, etc.) Moreover, they can be used to provide information about the function of meetings (number of participants, duration, time schedule, objectives, content and methodology to be followed, problem solving, etc.). They can also be used to provide clarifications on the procedure pertaining to the preparation and assessment of written assignments (form, method of preparation, assessment criteria, ways of getting support from the tutor, etc.) and to inform about final exam procedures (student preparation, support from tutor, marking criteria, manner and time of the exams, etc.).

Regarding the processing and elaboration of what students have already covered, HOU forums can be used to present exercises aimed at knowledge consolidation, present examples, methodologies, literature etc., solve queries and provide clarifications about the teaching material, link what has already been studied to ensuing chapters and assignments.

These observations as well as previous works that explored the behaviour of students of the HOU (Xenos, Pierrakeas, & Pintelas, 2002; Xenos, 2004), simulated the development of a formal language to interpret messages in the forums of HOU.

4. Formal languages

At this point, before going into a discussion of the specific language, it is deemed necessary to provide some definitions about the concepts that are being used.

**Formal language**: In computer science, a formal language is a set of words (or strings in general) of a certain length, whose characters come from a finite set of symbols (alphabet). It should be noted that a formal language involves a mode of expression of increased precision or more concrete than daily speech.

**Alphabet**: The alphabet of a language is defined as the set of symbols used by the language. For example, the English language has 26 letters in its alphabet (i.e. 48 characters, upper case – A to Z – and lower case – a to z) plus all punctuation marks.

**Vocabulary**: The vocabulary consists of a subset of all sequences created by letters of the alphabet, i.e. symbols accepted by the language.

**Formal grammar**: In computer science, a formal grammar is an abstract structure describing a formal language precisely, i.e. it is a set of rules representing in mathematical terms the number, finite length of strings formed by separate symbols (e.g. letters), which belong to a set, usually finite, called alphabet.

In standard generative grammars, first presented by Chomsky (1956), a G grammar consists of the following elements:

- A finite set of non terminal symbols N.
- A finite set of terminal symbols Σ, intersecting with N at an empty set.
- A finite set P of production rules, each of the form \( \text{S} \rightarrow \text{N} \) where \( \ast \) is the Kleene star operator and \( \cup \) denotes set union.
- \( \text{S} \) is a distinguished symbol \( \in N \) that is the start symbol.
- Usually such a formal grammar G is simply summarized as the quad-tuple \( (N, \Sigma, P, S) \).
- The language of a formal grammar G = (N, Σ, P, S), denoted as L(G), is defined as all those strings over Σ that can be generated by starting with the start symbol S and then applying the production rules in P until no more non-terminal symbols are present.

5. The language X

There follows a presentation of the language, which includes: its definition and semantics, its check, a syntactic check algorithm and the incorporation of parameters impacting on the effectiveness of a forum into the language.
5.1. Definition and meaning of the language

Based on observations at HOU forums the following became evident:

(a) There are two categories of communication actors: tutors and students for brevity, tutors will be symbolised with a $T$ and students with an $E$.

(b) As regards message types, these are distinguished into questions, answers and notices. Hereinafter, symbolised with $q$, $a$ and $n$, respectively.

(c) As to their content, messages are distinguished into those relating to (the respective symbols are given in brackets):

(i) the study of educational material ($M$)

(ii) questions/answers for exercises – assignments ($X$)

(iii) presentation of sample assignments by tutors ($P$)

(iv) instructions ($I$)

(v) assignment comments, corrections ($C$)

(vi) student comments on assignments ($D$)

(vii) sending–receiving assignments ($J$)

(viii) sending–receiving grade marks ($G$)

(ix) notification of advisory meeting ($V$)

Finally, the order in which above symbols will be written is: (a) message carrier (b) message type and (c) the content of the category to which the message belongs.

A message concerning a student’s question for an assignment is represented as: $EqX$ (where $E$ for student, $q$ for question and $X$ for the fact that this message is about an assignment).

Moreover, given that there are circumstances in which a message may contain two (and/or three) message types e.g. notice of a forthcoming meeting and response to a question on educational material, then, after entering the originator of a message, message types are entered in pairs together with their respective content categories. For example, the tutor’s message containing a notice of a forthcoming meeting and an answer to a student’s question on the study material will be represented as: $TnVaM$ (where $T$ for the tutor, $n$ for the fact that a part of the message contains a notice, $V$ for the fact that the content relates to a notice of a meeting, and here the first pair ends, followed by the second pair represented with the symbols: $a$ for the fact that the second part of the message relates to an answer and $M$ for the fact that the answer relates to the study of educational material).

Therefore, based on the above conceptual definitions, the language is defined by the following:

(1) The terminal symbols alphabet $V_T$, where $V_T = \{T, E, q, a, n, M, X, P, I, F, J, D, G, V\}$ as per above definitions which, for quick reference, are given in the explanatory Table 1.

(2) Non-terminals alphabet $V_N$, where $V_N = \{u, r, q, c\}$ more specifically, $r$: represents the message carrier (where $T$ for tutors and $E$ for students) $u$: represents a pair yc i.e. a message type $y$ (whether it is a question $q$, an answer $a$, or a notice $n$) followed by its content category. Non-terminal symbols are represented by the symbols shown in the following Table 2.

(3) Grammar $P$ set of rules of the form $\alpha \rightarrow \beta$, where $\alpha$ and $\beta$ sequences containing terminal and non-terminal symbols and $\alpha$ is not an empty sequence, as follows in Table 3.

(4) Symbol $S$

Every sentence generated starts with this symbol. Therefore, the language grammar is defined as a set of $\{V_T, V_N, P, S\}$ like the one defined earlier.

5.2. Language check

At this point, an indicative example of language check is presented to test the extent to which it can represent all messages (other than non education-related messages e.g. Seasons greetings, etc.). The example contains a series of messages represented by the sequence
Table 2
Non-terminals of the language.

<table>
<thead>
<tr>
<th>r</th>
<th>Message carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>Message type (question, answer or notice)</td>
</tr>
<tr>
<td>c</td>
<td>Message content category</td>
</tr>
<tr>
<td>u</td>
<td>Message type pair (y)/content categories (c)</td>
</tr>
</tbody>
</table>

Table 3
Set of rules P.

1. \( S \rightarrow ruS \)
2. \( S \rightarrow e \)
3. \( u \rightarrow uyc \)
4. \( u \rightarrow e \)
5. \( r \rightarrow T \)
6. \( r \rightarrow E \)
7. \( r \rightarrow e \)
8. \( y \rightarrow q \)
9. \( y \rightarrow a \)
10. \( y \rightarrow n \)
11. \( y \rightarrow e \)
12. \( c \rightarrow M \)
13. \( c \rightarrow X \)
14. \( c \rightarrow P \)
15. \( c \rightarrow l \)
16. \( c \rightarrow F \)
17. \( c \rightarrow D \)
18. \( c \rightarrow j \)
19. \( c \rightarrow G \)
20. \( c \rightarrow V \)
21. \( c \rightarrow e \)

Where \( e \) stands for an empty symbol.

TnVnMEqMqXEaXTaM, which, according to their definition, represent a message whose sender is tutor \( T \), containing a notice \( n \) referring to forthcoming advisory meeting \( V \) and also a notice \( n \) concerning the study of educational material \( M \). This message is replied to by student \( E \) who is asking a question \( q \) concerning the study of educational material \( M \) and also another question \( q \) about the forthcoming assignment \( X \).

This message is replied to by other student \( E \) who is answering \( a \) about the forthcoming assignment \( X \). In the end of discussion is found a reply from tutor \( T \) on the question concerning the study of educational material \( M \).

Fig. 1. Parse tree for sequence TnVnMEqMqXEaXTaM.
According to the above, the sequence $TnVnMEqMqXeBaXTaM$ is a sentence of the language because:

- Rule: $S \rightarrow ruS \rightarrow ryucS \rightarrow ryucycS \rightarrow ryucycruycycS$ (Rule 4)
- Rule: $ruycycycycS \rightarrow ryucycycycruycycS$ (Rule 10)
- Rule: $rycycycyuycS \rightarrow rycycycycyuycycycS$ (Rule 6)
- Rule: $rycycycycycycycycycycycycycS$ (Rule 5)

The above procedure can be represented schematically with the help of the following parse tree in Fig. 1.

5.3. Language syntax check algorithm

Based on the above, a language syntax check algorithm has been developed. However, some comments should be made before proceeding to its presentation. To avoid making use of nine conditions (corresponding to message content categories), a single column table $c$ is used containing all nine message content categories.

Moreover, there were some questions as to how concepts such as time, group size and volume of information could be incorporated into the language.
Regarding the question of time, it was decided to link it with each of the nine (9) message content categories. More specifically, considering that a message may contain may be more than one contents, e.g. a question for a forthcoming assignment and a question on the study of educational material in a message from the same student, it was decided to have the dates recorded for each content and not just for each message.

In other words, to put it in terms of the language, after each pair \( yc \) (message type/content) the date (using the system clock) should be recorded. Of course, to implement the aforesaid procedure nine (9) stacks were used (as many as the message content categories), each stack being of a length that corresponds the number of terminal symbol occurrences \( M, X, P, I, F, D, J, G, V \) which are indicated by the non-terminal symbol \( c \).

Given that the above information is recorded, time differences can be automatically calculated (in days, by deducting the previous one from the current date – per message content category) and therefore another 9 stacks will be added to the aforesaid time differences. Of course, the length of the stacks will be the same as those of the stacks with the number of dates minus one \((-1)\), i.e. except the initial message which will be considered as point zero \((0)\) from which counting of time differences will commence. The contents of stacks relating to time differences may be an important criteria which, in conjunction with other criteria, may be taken into account in assessing the impact of a forum in the learning process.

Another concept which should be considered is the concept of the volume of information. Considering that a message from a student may contain may be more than one contents, it was decided to have the dates recorded for each content and not just for each message. It was thus decided, in respect of this parameter, to use the number of pairs \( yc \) as a measure, i.e. message type \( y \) followed by the content category \( c \).

In other words, it was decided to measure the number for each message content category in a message and not just the number of messages (something which is already provided by current forums).

Therefore, in language terms, there is a counter which will record the number of terminal symbol occurrences \( M, X, P, I, F, D, J, G, V \) which will result from the non-terminal symbol \( c \) with each occurrence of a pair \( yc \).

Given that there are nine (9) message contents, there will be in fact nine (9) counters and therefore it is appropriate to use a single column table (nine slots) each element of which will function as a counter for each case. The contents of this table may also be another criterion for assessing the impact of a forum in the learning process.

Finally, as regards the group size, this is different from the aforesaid approach from the point of view that it is not the number of different message contents that is taken into account but the number and the frequency of messages as single entities. Therefore, in terms of the language, an extra variable (counter) is used to record the number of the occurrences of the terminal symbol \( E \) (student) resulting from the non-terminal symbol \( r \) (message carrier). Similarly, an extra variable (counter) is used to record the number of the occurrences of the terminal symbol \( T \) (tutor) resulting from the non-terminal symbol \( r \) (message carrier).

At this point, it is worth noting that an algorithm was selected and not a specific programming language in order to avoid know limitations on possible extensions of the algorithm.

Fig. 3. Parse tree for the case of the application example (i.e. sequence EqXEeqMTaoEqXEaoXEqlqXTalaX).
5.4. Use of the language

Based on the language parsing check algorithm, an application example is provided as to how we can get to the language from a specific HOU forum discussion and produce at the same time results concerning: number of tutor and student interventions, time differences (between messages) and number per message content category for each student.

Below is presented a form of HOU’s asynchronous discussion forum in Fig. 2. The above – indicative – discussion (the complete text is contained in English in the Annex) is represented by the following string: EqXEqMTaXaMEqXEaXEqlqXTaIaX which, according to rules in 5.2, is a sentence of the language.

The above sentence can be represented schematically with the help of the following parse tree in Fig. 3.

Moreover, the following results are generated from carrying out the parse check algorithm on the string EqXEqMTaXaMEqXEaXEqlqXTaIaX: number of tutor and student interventions, time differences (between messages) and number per message content category for each student.

It becomes evident from the presentation of the use of language that two objectives are achieved. On the one, the interpretation and categorisation of messages in a structured way, in a distance education forum, and, on the other, the generation of information which is not simply statistics about the overall forum use but which is linked to each content category of a message associated with the learning process. Thus it enables the specification of a measurable structure which interprets complex human activities such as the posting of messages to a forum. Using this language, user messages are approached from a time and a learning perspective. It therefore goes into learning issues of substance where the results from its use may provide data for other research associated with the impact of forums on the learning process and their causal relationships in the broader field of an inter-disciplinary approach.

6. Conclusions and future directions

It becomes evident from the foregoing presentation that the practice of distance learning in recent years has acquired new characteristics as to the methodology and the tools used in relation to both the tutor and the student. Moreover, it is a fact that the subject matter of forums in distance learning is a dynamically changing field which requires constant updating and redefinition. This is the context of application of this paper.

The intention of this paper has been to complement research in the field of distance learning forums. Considering that this field is, from a research perspective, still in an early stage despite the progress which has been achieved in other web-related fields, the significance of this work is obvious.

It has been shown that communication in distance learning is of crucial importance. Research approaches concerning the operating framework of forums in distance learning, their structure, their management, their impact on students and tutors, as well as the evaluation of their effectiveness in distance learning, at a European and international level, have been presented.

Based on HOU forum observations, it was found that they provide significant help in the learning process and may help with the organisation of studies of a thematic unit and with the processing and development of what learners have already studied. So, a language was developed, defined in mathematical terms. This language has been tested for its proper function and whether it can represent most common cases of messages. Once it was shown that it met the above requirements, a language parsing check algorithm was designed to demonstrate that the language can be used in a programming environment and be further developed for use by machines. In this process, factors influencing the effectiveness of a distance learning forum have been taken into account by incorporating concepts such as: time, group size and volume of information, in the language.

At this point, it may be appropriate to ask what is the use of a tool which is based on the present project and what is the purpose of evaluating HOU and/or similar providers of distance learning. As pointed out in the literature review, there is a gap in this field and therefore there is a need for developing a tool to support a mode of discussion in a distance learning forum and, at the same time, take into account factors influencing (forum) effectiveness and produce the required results. It therefore goes into learning issues of substance and the results from the use of such tool may provide data for other research associated with the impact of forums on the learning process and their causal relationships in the broader field of an inter-disciplinary approach by incorporating cognitive and artificial intelligence theories. It may thus be an aid to participating tutors to enhance their teaching practices. This is a subject of ongoing research.

Finally, it should be made clear that the intention for developing this tool is not to draw the attention away from the fundamental principles of distance learning but instead it is aimed to contribute to its further development and enhancement and be a complementary, not a redundant tool.

Acknowledgements

The authors would like to thank the anonymous referees for their careful review and useful suggestions.

Annex

**Student: Thursday 26th October 2006, 8:32 am**
So, let me do the start!
Could you please explain to us what is being asked in 1.4?
In (a) is direct abstraction needed? And in (b) add with supplement as for 2?
Am I right or wrong?

**Student: Thursday 26th October 2006, 12:50 am**
Good morning/Good afternoon,
I would like to ask whether the content of the 1st volume, is enough and if it offers the requisite knowledge for the completion of the activity.

In case of being in need of supplementary documents, is there the possibility for you to indicate where the relative files/documents could be found.

Thank you for your attention and your immediate response. Friendly

Tutor: Friday 27th October 2006, 9:57 pm
Yes, that is right!

As I already said in the advisory meeting, the first volume should only be the beginning of your studies (this is the case generally in the university, not only for this instance). Further than that, there is plenty of bibliography in Internet as well as the bookshops in case any of you needs to go deeper in certain issues. A very good first point for research is the portal of the EAP where there is plenty (and very good!) additional material, as well as references to ancillary bibliography.

The forum’s aim is not (only) for the students to ask questions to me! The questions are being asked to all members of the group and everyone could answer. I did not answer Mr Koutakis’ question for a long time, and no one gave him an answer even if the question was actually a request for a very simple clarification.

Student: Friday 27th October 2006, 11:30 pm
Good evening,
My question is in regard to question (c) in the fourth subject. My issue is that the question is very broad and I am unable of decide whether a broad or a more specialized answer is required. For example, let us assume that this table is a part of a database, would we be able to calculate the age with a simple script or with a function. So, are we gone a describe what the px script does. It seems to me quite excessive, to the point that I think that either I have not understood the question or that I have overestimated it...any help?

Student: Saturday 28th October 2006, 10:51 am
Good morning,
My estimation, regarding the sub-question 4, there is a range of Age, to which in 4B we have already inserted data, the student's current age, e.g. 30 years old.

What is being asked is an alternative column so that there would be no need to keep up the age for the following years. It does not seem that the editing of a script, which would calculate the age is need. It basically asks for the filling of the alternative column by applying a computational action which surely uses a date or a year of birth. Hopefully I’ve been helpful.

Student: Saturday 28th October 2006, 4:52 pm
Good Evening,
I would like some clarifications:

1. In the 1st advisory meeting, it was mentioned and required, that the 1st and the 2nd pages of the assignment in question, should contain the evaluation form and the answers should start from page 3. There is a clarification in the last page of the 1st assignment “your answers should not exceed the total of 10 pages”. In my assignment I also include the questions, is this unnecessary? If I let my assignment as it is, the total number of pages surpasses the 10 pages required. Is this condition strict.
2. Sub-activity 2B: Should we simplify the symbols and the logical operations of the logical function?
3. Sub-activity 2C: Should we only mention the function that the circuit carries out? Should it be substantiated and proved according to the values of the previous sub-questions?
4. In sub-activity 3B: it is required the chart of data flow to be given in 6 computational steps. Is there a restriction on the number of actions that are carried out per square? For example, according to the control I have already set, I also do some functions per square (division, multiplication, and summation) so that I acquire the desirable result. Is this wrong?
5. Sub-activity 4D: Do we consider as data the final grade per student? For the search of the maximum and minimum value should we do an extensive description or just a reference as a point of their control and spotting? Thank you.

Tutor: Sunday 26th October 2006, 6:47 am
To start with, thanks for giving an answer to your colleague! It is true that what is required is nothing more than what you claim (how could we ask a script from you by now? – half of you don’t even know what a script is, not to mention to compose one!).

In regards to your requests:

1. The conditions are not strict. In any case you do not have to write the questions in your activities.
2. No, there is no need for any simplification, just quote the function that corresponds to the outputs as they are in the circuit.
3. Reference only, nothing else!
4. Mmm, I do not wish to confuse you because there are many ways to calculate the change. Do it as you reckon, as far as it is correct (for the time being it is not a problem if it has more steps).
5. Yes, consider the rate given (which is the table completed). I am not sure whether I understand the second question, what is needed though is a description (in Greek! – because someone asked me for an algorithm) of the steps needed for the finding of the average that is required.
6. Thanks again for everyone’s interest and contribution. Judging by your questions, I guess I’ll get some really good assignments! Just do not overestimate the assignment (especially those of you, who already know programming), these are just introductory questions!

Good Luck
