429/D

Deployment of a website implementing bioinformatics algorithms for simple sequence analysis

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Bioinformatics refers to the creation and advancement of the algorithms, computational and statistical techniques, and theory to solve formal and practical problems arising from the management and analysis of biological data. Hence the development of algorithms plays an important part in bioinformatics. They are the tools which filter out information out of a sea of raw data. An algorithm is a systematic procedure for solving a problem in a finite number of steps. A computer can be used to solve a problem only if the problem can be converted into an algorithm. The users of bioinformatics utilize a number of tools to prepare, analyse and compare individual sequences. Most of these tools need to be installed in the system to be used for even trivial tasks like DNA to RNA conversion.

The main objective of this study was to identify such trivial tasks and implement a website where users can carryout this task easily: without installing any software and without deep computer knowledge.

Implemented website consists of two main parts. Common tasks, which consist of tools to prepare the sequences for analysis in bioinformatics and algorithms, which are used in pair-wise sequence comparison. A personal computer with selected software installed was used for the designing and creation of the website. The algorithms used widely in sequence comparison were selected as implementable algorithms. Navigation system which is used to create the links between the individual pages of the website was entirely planned and created. Each task completed was considered as a problem and it was converted into a simple algorithm. Individual pages were created based on these algorithms. User interface was designed, the code to check the user input for errors (validation) was written, page was tested for errors using several different inputs, and the output produced was compared with an already available program's output for accuracy. Each page was designed and necessary code was written following the same sequential pattern given above. The website will shortly be hosted on the internet to allow the users to complete simple sequence preparation and analysis tasks without any need for special software to be installed and will give a single tool for the researchers to complete tasks which need several different currently available tools.

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