

Multifunctional Generic System

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Abstract : As per the present scenario of computing world a huge number of calculation are required in many fields such as research and development, computer having high computational power is needed and thus the cost to maintain such project is quite high. As per the census of 2012, 360,985,492 i.e. 34% of today's gadgets are connected to internet, by our project we have proposed an approach to develop a generic system by which we can easily configure these 34% devices to take part in these computations. Moreover our approach offers a high degree of flexibility, we can use the computational capabilities of any device for any random task. If the problem definition changes slightly or entirely our system will not be affected by these changes. We have proposed as approach to built the system suitable for corporate world by which they can provide various services and at the same time they will be using their client system for their various computational needs. Thus our project is multifunctional and generic in true sense.

Keywords: generic, computation, multifunctional

I. INTRODUCTION

Today we are living in a digitalised world equipped with a various computing devices around us, all these devices have an high end processor capable of performing enormous computation with a rapid speed. But in fact all these devices are not used up to their potential. So to utilised this unused computing power of those devices project BOINC^[1] was started in February 2002, The BOINC framework consists of two layers which operate under the client-server architecture. Once the BOINC software is installed in a machine, the server starts sending tasks to the client. The operations are performed client and the results are uploaded to the server-side.

Influence by the BOINC, in our paper we have proposed an approach to developed a generic system by which we can easily used the potential of these computing devices. At present we can only use the computing power of the devices who have participated in various project hosted by BOINC framework. Still lot of devices are not a part of the BOINC system. Through our project we aim at including 360,985,492 devices presently using the internet, to take part in this distributed computing so that we will be able to use the unused cpu cycles of these devices and which in turn will be beneficial for various computing task involving high degree of calculation to finish in lesser time.

II. LITERATURE REVIEW

The basic idea for our first module was influenced by BOINC [1]. The Berkeley Open Infrastructure for Network Computing (BOINC) is an open source middleware system for volunteer and grid computing. It was initially developed to support the SETI@home [2][3][4][5][6] project. Later it became useful as a platform for other distributed applications. Such as mathematics, medicine, molecular biology, climatology, and astrophysics. The main aim of BOINC is to make it possible for researchers to thoroughly utilise the enormous processing power of personal computers around the world. With the help of this technique, the algorithm like the Web crawler[7], Satellite image processing, DNA encoding, etc can also be implemented.

In the second module of our paper we have discuss the approach of providing various services to the user. One of them is the online compiler[8] in which the basic idea is to get the code compiled from anywhere in this world and getting appropriate outputs by simply using this application. This can be used by the IT professionals or the students also. A cloud will be available where a server will be present which handle codes and will compile codes separately sitting on another system.

The third module of our paper deals with the monitoring and controlling the client system[9][10] in a

better and appropriate way. It aims to develop an integrated software solution that allows a network administrator to remotely monitor his LAN by the server.[11] This module provides the maximum details about the network to the administrator on their server, when administrator is away from office or goes out station.

III. BASIC APPROACH

In our paper we have worked on concept to develop a generic system, which can be configured as per user need and can serve various user requirements.

As per present scenario we can view the client server system in which a server act as a dedicated system which offers specific services to the client and the client system is benefited accordingly.

Today many company provides various services to their user using their dedicated server like mails, search engine, social networking etc. To offer these services it becomes mandatory for these enterprises to builds their own system on which huge calculations are involved. Moreover various scientific calculations are carried out which involves huge computation and resources. The cost to maintain these systems is quite high and seeing today's competition they are not adequate.

We have developed a generic system in which the client machine can be used by this enterprise to implement their complex algorithm. Though our work is influenced by existing BIONC system, but our project offers more and powerful modules for an enterprise.

Our paper is divided into three different independent modules which correlate at a particular instance to support the concept of our paper; the three modules are as follows

- Development of Generic System Capable of participating in various computing task as per requirement of an enterprise.
- Providing various services to the client.
- Providing an ultimate solution for monitoring and controlling the client connected to the server.

A. *Development of Generic System Capable of participating in various computing task as per user the requirement of an enterprise.*

In Present Scenario of Distributed computing, a client system which is participating in the activity of distributed computing may be viewed as a dedicated system specially configured to handle a particular type of a problem. This may be viewed as an major disadvantage of present system, as they lack the ability to respond to different type of problem, they are designed for a specific

purpose a slightly change in problem definition may result in modification on client side to handle such type of situation, same will be the case when the problem definition changes entirely or there is an urgent need to handle a new task.

Through our paper we have proposed an approach for developing such a system which will not require a single change to the system participating in the distributed computing. Once the client is configured for the first time, now it will be always ready to answer any type of situation. On Completion of our project the client system can be viewed as a generic system which is capable to participate in any type of distributed computing network. Up till now the client system was dedicated towards a particular task, from now onwards the client system can be consider as a system dedicated to computing, thus our project elaborate the definition of Distributed computing in true sense.

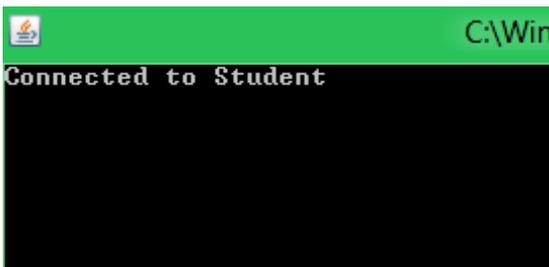
B. *Providing various services to the client.*

This module of our paper act as a frontend for the user (customers).Through this module the enterprise can provide various services to their customer. The customer/client will use these services provided to them by enterprise, meanwhile the client system will automatically gets connected to the server system and the server will shift its load to the client system, now the enterprise will use the client for running their various complex and time consuming algorithm. Thus in this way both are benefited.

C. *Providing an ultimate solution for monitoring and controlling the client connected to the server*

This module mainly focuses on the controlling and monitoring client (pc or mobile) remotely and providing security when the user is away from the place. This system provides ideal solution to the problems faced by System (pc) owners in daily life. The system is also wireless therefore more adaptable and cost-effective. The networking based system provides security against intrusion as well as automates various home appliances using networking concepts. The system also use GSM technology thus providing ubiquitous access to the system for security and automated appliance control when the main server fails due to some reasons. More ever we can block a website and application from on our system and even we can allow the access to block website and application thus the system is flexible to user need. The user receives a message whenever an unauthorized person accesses his system in his absence and he receives notification about his activities on pc. Thus With the help of this project we can even control whole pc through sms based technology.

IV. IMPLEMENTATION



To achieve our main objective we have implemented various module which work together to build a complete system. They are as follow

- We have used a Spider program, which crawl the WebPages over the internet, when an client uses the service provided by the server at the same time the spider program get downloaded on the client system and start working.
- We have built an online compiler capable of compiling program in various languages like c, c++, java etc. It is easy to use, as it is web application no installation is required on client system.
- We have developed a module which is capable of monitoring the client system connected to server system. Its can monitor a personal computer as well as mobiles (android). We can not only keep a eye on the user's activity but also we can execute a task on the client machine if we find it necessary. For implementing this module in college we have also included a feature which allows the administrator to block various website and also allow access to block website.

Now we will take a look at how all these module work in coordination with each other and achieve our main objective. We have implemented our idea from the point of view of an large organisation which have large no of customers and employees.



Fig 1: Login screen for customer and employee

A. When a customer access service provided by a company.

1. Customer simply logs into his account for using service, here he will be using an online compiler

for compiling various programs. Here at this point we can provide various services to customer.

2. As soon as he logs on, the server will know that this is the authenticated user and the Spider program will be downloaded on the client system. Here at this point the company can decide about which program they want to be executed on the client machine and thus they can upload any required program on the client machine, here the generosity of our project is proved.

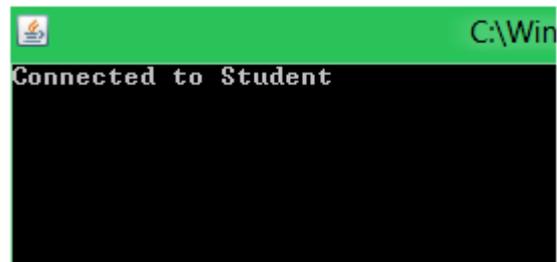


Fig 2: Student has login into his account

B. When an employee access service provided by a company.

1. Employee simply logs into his account for using service, here he will be using an online compiler for compiling various programs.
2. As soon as he logs on, the monitoring and controlling module will be functional and the administrator can only easily track the activities of the employee. He can block him from having access to restricted resources and at the same time can even grant access to those resources, if found it appropriate.
3. Also if company finds that the employee is not utilising his cpu fully, in such case the company can use his unused cpu cycle for their benefit by implementing the 1st module.

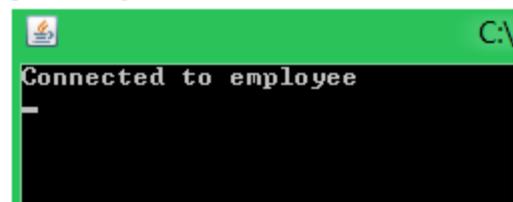


Fig 3: Employee login to his account

Thus when both student and employee gets login to their respective account they both are using various services provided to them by their respective company, but at the same time the company will be able to run their complex and time consuming algorithm which requires high computational resources on the clients devices thus these algorithm can be easily implemented in distributed computing to increase their efficiency.

C. Implementation of 1st module

We were successful in achieving our main objective, we crawled various WebPages over the internet in real time when crawled through a single device we crawled 1765 WebPages in near about 33 minutes and when we implemented the same algorithm in our project we were able to achieve the same result in 12 minutes.



Fig 4: Crawler program crawling WebPages.

D. Implementation of 2nd module

Through our second module we build an online compiler which a corporate company can use to as a service for their client, when ever a user logs into his account a crawler programs get automatically downloaded on client system and starts its execution using the resources of client.



Fig 5: online c++ compiler with output

E. Implementation of 3rd module

The third module of our paper provides an ultimate solution for controlling and monitoring various devices connected to server system. We can monitor the activity of the client connected to the network and moreover we can even control his device remotely, we can start stop any service, application, execute various command on client side. It also block access to the restricted site and can also grant access to these block site whenever an administrator found the request of client to access those site's are valid, thus it increase the flexibility of the system.

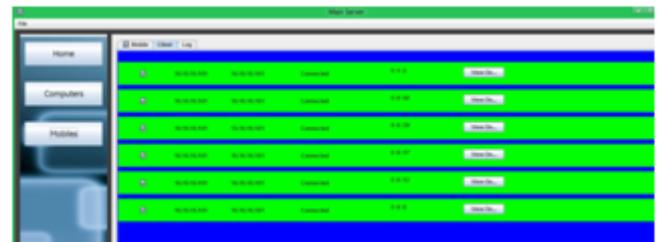


Fig 6: showing various clients connected to server system.

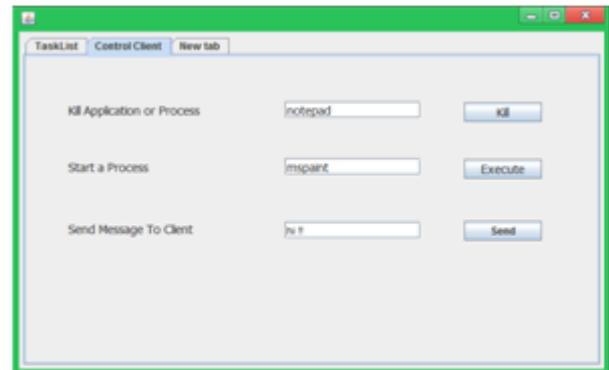


Fig 7: Control panel for Controlling the client.

V. CONCLUSION AND RESULT

Our paper proposed and approach to built an multifunctional generic system, though it is influence by present BONIC system but we have proposed an idea through which we can implement it in a more general and in broader sense. It is suitable for various organisations that have a large numbers of customers. Thus a large number of devices will be able for computation for research and development and thus in turns it will flourish our countries technical growth as we will be able to process large amount of data at a greater speed on almost each and every device available.

Thus our paper not only suggests this idea but also shows it implantation. This idea can be easily implemented by various companies, universities, scientific organisations and if we take a look towards today's android game user, then each and every mobile having android mobile will be readily available to provide its computational features for the welfare of our society.

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