

# Case Study for Food Force II Project



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### **Abstract:**

With the advent of new digital media and low cost computers which are connected to each other, the educational system needs better ways of teaching children. Recently, games on computers and other digital media are being explored as a possible medium of imparting education. The existing games however are either developed for entertainment purposes only or have a limited focus in aiding the children learn according to the existing curriculum. This project describes an attempt at combining story-telling with collaborative game-play to achieve better learning with FoodForce II. FoodForce II is an attempt which aims at providing a holistic view towards learning by inculcating moral values and other cognitive skills.

### **Client Profile:**

The Client have been associated with the WFP(World Food Programme) of United Nations who developed the Food Force. These People have adopted the story of Food Force, and started developing the FoodForce II game. The Beta-Version of FoodForce II was released in May 2009, it is an open source game.

### **Business Need:**

FoodForce II is an educational project to solve hunger crisis by collaborative, joyful and self-empowered learning. To curb hunger and poverty and at the same time to spread education is a very challenging task. This motivated the Client to come up with an idea of developing an application which is entertaining and at the same time educative. So they came up with FoodForce II.

FoodForce II is an open source educative game whose objective is to teach children that how they can manage resources in their villages. It educates children and teachers in a village on how to achieve self sustenance in a fun and non-intrusive way.

While Developing the game one of the biggest challenges was to make the game run in OLPC(one laptop per child) laptops.

### **Client was looking for an independent test partner to Test the following aspects of the game:**

- Code constructs (Unit testing).
- Functionality.
- Usability.
- Performance
- Portability on different Operating Systems e.g Windows, Mac, Linux and Sugar.

Confidential

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## **Challenges:**

### **Some of the challenges faced by the team at Chakkilam were:**

Non availability of Proper High-level and low-level Design documents. Non availability of the Control flow diagram to conduct the Unit-Testing. Installing the Application related software and Running the Application from the Source code.

## **Chakkilam's Approach to Test Solution:**

Unit Testing – Automation framework was designed for unit testing based on PyUnit open source tool. 'Heapy' programming environment was used to debug and optimize memory related issues.

Functionality Testing – This was primarily exploratory. We followed Model Based Testing approaches as given in State Transition Diagram and OATS (Orthogonal Array Test Strategy). Techniques of Equivalence partitioning and Boundary Value Analysis were implemented to ensure test coverage was complete, as there was non-availability of discreet requirements document.

Usability Testing – We followed an iterative testing approach for usability. Following areas were tested comprehensively:-

- Navigation consistency between different levels of the game
- Text, icons, images, colours in various screens and their consistency
- Heuristic evaluation was done to judge its compliance with recognized usability principles as given by the following Nielsen's heuristics:

- Visibility of system status

- Match between system and the real world

- User control and freedom

- Consistency and standards

- Error prevention

- Recognition rather than recall

- Aesthetic and minimalist design

- Help users recognize, diagnose, and recover from errors

- Help and documentation

Performance Testing – Tools like VisualPyTune were explored for fine tuning of the application.

## **Chakkilam followed iterative approaches as given under:**

The team has downloaded the source code from the repository and spent some time to analyze the code and developed the Control flow diagram for the source files of the Application.

The team then spent two days playing with the application to finish all the levels in game before planning the testing strategy and identified some of the risky areas of the application for testing, divided the work and started by testing the application.

## Benefits:

The project helped Chakkilam gain significant expertise of testing in Gaming domain

The project was instrumental in making Chakkilam hands-on with some of the most contemporary open-source tools and testing paradigms in practice today.

The client benefited from optimized processes and best practices followed at Chakkilam

## Metrics:

Test Efficiency metrics

Requirements traceability Matrix

Test Productivity metrics

## Technology:

Application is Developed in Python and Pygame, Pygame is a development module in Python.

Based on MVC(Model-View-Control) design model.

Windows, Linux, Mac and Sugar Environment.

Google Issue Tracker.

## Testimonial:

Project - FoodForce2 is both a classroom tool, and an outside classroom activity. It is a new kind of an educational solution, an “expanded school” which grows well beyond the walls of the classroom. The game play has been designed in a way to educate the child about certain key learning areas.

Role of Chakkilam- Chakkilam has been responsible for the quality of the product. They have done functionality testing, made performance benchmarks, written unit tests and filed a lot of bugs in the process.

Experience of Food Force II Team about Chakkilam:

Feedback on handling the Engagement- The Chakkilam team got involved in the project at a very later stage when lots of code had been written and a version without any kind of testing also had been released. They did a great job of getting their team upto speed with the new technologies and new platform and also started contributing meaningfully in a really short span of time.

Feedback on Project Execution- Project execution has been exemplary by the Chakkilam. The team is headed by a very senior person who has loads of experience in leading testing for the projects with very tight time constraints.

They have executed the project with professionalism and are currently working with us for the next release in a very constructive manner.

Feedback on Project Team- The project team consists of experienced leader and many talented and intelligent testers who have worked really hard and have shown enthusiasm in learning and applying new technologies.

We are very pleased with the project team. They required little input from our side and were often able to come up with new and innovative ideas for the better testing of the product.

Value Addition to Food Force II from Chakkilam:

Specifically they have added value by doing the following:

1. Manual functionality testing with each new feature addition and minor changelists.
2. Making a functional testing document and keeping it updated,
3. Checking for regressions and making sure there are no unwanted regressions.
4. Trying to find out performance painpoints by doing profiling of the code, though we have not got any meaningful results from the exercise.
5. Logging all the bugs found through the testing in the issues repository.
6. Writing unit tests and making sure we have good code coverage with the help of unit tests.

## **Chakkilam Test Services:**

Chakkilam Infotech is a Software Testing Services provider. Chakkilam Test Labs defines test designs and delivers business enabled Testing solutions that help Global companies win in a flat world. These solutions focus on providing strategic differentiation and operational superiority to clients. Chakkilam creates these solutions for its clients by leveraging its domain and business expertise along with a complete range of testing services. The majority of its services are in Software Testing with Manual and Automation Test Processes and automation Testing. The offshore and on-site quality assurance services model provides time to market edge with cost affective solutions. The highly technical and dedicated testing professionals from Chakkilam provide the innovative solutions to the customers. All these professionals are ISTQB Certified.

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