**FORMAT SAMPLE**

**Name:**

**Software Defect Description:**

Knight Capital Group is a financial service firm which is in market making, electronic

execution, and institutional sales and trading. With its high-frequency trading

algorithm Knight is one of the largest trader in U.S. equities, currently acquired by

Getoc LLC. In 2012, the firm took estimated $440 million in cash losses in just 45

minutes due to faulty test of new trading software. Computers executed a series of

automatic orders that were supposed to be spread out over a period of days.

The reason for this computer glitch was a combination of software bugs from ISV,

bad documentation for the software and human error from Knight Capital group.

**Details of the bug:**

Firm deployed untested software to a production environment, which had an

outdated function. Failure of software was also due to one of the technician who

forgot to copy new Retail Liquidity Program code to one of the eight SMARS

computer servers; which was automated routing system for equity orders. RLP code

repurposed a flag that was formerly used to activate the old function known as

‘Power Peg’. Power Peg code which was designed to move stock prices higher and

lower in order to verify the behavior of algorithm in controlled environment.

Since there was no second technician to review this deployment, Power Peg code

was not removed as well as new RLP code was also not added to the eighth server.

Knight Group had discontinued using this Power Peg functionality many years ago.

When Knight started trading, orders sent with the repurposed flag to the eighth

server triggered the defective code, which was present on that server. As a result,

server began sending child orders to certain trading centers for execution. Knight

relied on its technology team to identify and address the SMARS problem in live

environment. In one of its attempts to address the problem, Knight uninstalled the

new RLP code from the seven servers where it had been deployed correctly. This

action worsened the problem, causing additional incoming parent orders to activate

the Power Peg code that was present on those servers, similar to what had already

occurred on the eighth server. There was also problem with algorithm where it paid

the ask price and then sold at the bid price instantly, which was unusual.

**Consequences: Financial loss and reputation loss**

Company loss was four times its net income from all of 2011 and the loss was bigger

than company’s market cap. Knight’s trading activities caused a major disruption in

the prices of almost more than 140 companies listed at the New York Stock

Exchange. Knight Capital took a pre-tax loss of almost $440 million. Because of this

KC Groups stock price collapsed, sending shares lower by over 70% from before the

announcement. This crippled the firm and brought it to the edge of bankruptcy.

Knight has cultivated a reputation as one of the best market-making firm in the

business, with trading technology that is as fast and secure as anything else

currently deployed. This incident caused great blow to their reputation along with

the financial losses. Not only that other competitors such as NYSE Euronext got

competitive edge, who was rolling out it’s new Retail Liquidity Program in market at

same time. Thus there was lot of questions on the quality of software which KC

Group had a reputation for.

**Prevention Plan:**

List what could haven been implemented to prevent this defect. What type of testing could have been apllied at which stage of the life cycle in order to prevent this.