When Digital Finance Fails – Quiz

Digital Finance — Cross-Module Capstone

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Digital Finance — BSc Course

Question 1

Wirecard was a German payment processor that collapsed in June 2020. What was the core of the fraud?

- A cyberattack stole customer data
- EUR 1.9 billion in cash balances on the balance sheet simply did not exist — the company fabricated revenue through fictitious third-party payment partners
- Wirecard's technology platform failed under high transaction volumes
- Wirecard charged excessive fees to merchants

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(C) Wirecard's technology platform failed under high transaction volumes

(D) Wirecard charged excessive fees to merchants

Answer: (B) Wirecard reported revenue from third-party acquirers (TPAs) in Asia, many of which either did not exist or did not process the claimed volumes. The EUR 1.9B supposedly held in escrow accounts at two Philippine banks was confirmed never to have existed. The fraud was old-fashioned accounting fabrication enabled by a FinTech label.

Question 2

Terra-LUNA collapsed in May 2022, destroying approximately $40 billion in value. UST was an "algorithmic stablecoin." What does that mean?

A. UST was backed 1:1 by US dollars held in a bank

B. UST maintained its dollar peg through an automated mint/burn mechanism with its sister token LUNA, relying on code and arbitrage incentives rather than dollar reserves

C. UST was a government-issued digital currency

D. UST was backed by gold reserves

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(D) UST was backed by gold reserves

Answer: (B) Unlike reserve-backed stablecoins (e.g., USDC), UST had no dollar reserves. Instead, when UST traded below $1, arbitrageurs could burn UST and mint LUNA, and vice versa. The algorithm was designed to restore the peg through market incentives. The flaw: LUNA's value depended on the system being stable — circular collateral.

Question 3

FTX, once valued at approximately $32 billion, collapsed in November 2022. What was the fundamental governance failure?

A. FTX had too many board members who disagreed

B. FTX had no board of directors, no independent auditor, no separation between the exchange and its sister trading firm Alameda Research, and zero compliance staff — customer funds were secretly commingled with proprietary trading

C. FTX was hacked by external attackers

D. FTX failed because cryptocurrency prices dropped

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Answer: (B) FTX had approximately 300 employees but zero compliance staff, no board oversight, and no separation of duties. A software backdoor allowed Alameda to withdraw customer funds without triggering alerts. $8 billion in customer deposits was spent on venture investments, political donations, and real estate.

Question 4

Knight Capital lost $440 million in 45 minutes on August 1, 2012. What caused the loss?

- A rogue trader made unauthorized bets
- A software deployment error reactivated dead test code (from 2003) on one of eight servers, which executed millions of erroneous trades at market price with no position limits and no kill switch
- Knight's trading algorithm correctly predicted a market crash
- A power outage shut down Knight's trading systems

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Answer: (B) New code reused an old flag name ("SMARS") that controlled a 2003 test function. A technician deployed to 7 of 8 servers but missed one. When the flag activated at market open, the 8th server ran the old test function in live markets — buying and selling aggressively with no limits. The loss rate was approximately $10 million per minute.

Question 5

Silicon Valley Bank (SVB) failed in March 2023 after depositors withdrew approximately $42 billion in a single day. What was the root cause?

A. SVB made bad loans to tech startups that defaulted

B. SVB had a classic duration mismatch — it invested in long-dated bonds (5–10 year maturities) funded by short-term deposits, and when interest rates rose, the bonds lost approximately $15 billion in value while depositors fled

C. SVB was defrauded by its management team

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Answer: (B) SVB's failure was the oldest risk in banking: borrow short, lend long. When the Federal Reserve raised interest rates, SVB's held-to-maturity bond portfolio lost $15B in market value. When depositors (94% uninsured, concentrated in tech/VC) learned of the losses, they coordinated withdrawal via Twitter and VC group chats — the fastest bank run in history.

Question 6

Archegos Capital Management collapsed in March 2021, causing over $10 billion in losses to prime brokers. What financial instrument did Archegos use to build hidden positions?

A. Common stock purchased through a brokerage account

B. Total return swaps (TRS) — derivative contracts that gave Archegos economic exposure to stocks without actually owning them, keeping the positions invisible to other banks and regulators

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Answer: (B) Total return swaps let Archegos get the economic exposure of holding stocks (price gains and dividends) without actually appearing as the owner. Because Archegos was a family office (exempt from hedge fund disclosure rules), no single bank or regulator knew the total position across all six prime brokers. Combined leverage was 5–8x on concentrated positions.

Question 7

The lecture identifies four root causes that recur across all six crises. Which of the following is **NOT** one of them?

A. Excessive leverage
B. Opacity (hidden risks, undisclosed positions)
C. Technological obsolescence (outdated computers)
D. Regulatory gaps

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Answer: (C) The four recurring root causes are: leverage (amplifying losses), opacity (hiding risks from counterparties and regulators), misaligned incentives (short-term profits vs. long-term stability), and regulatory gaps (supervision that fails to keep pace with innovation). Technology was a factor in Knight Capital but not as obsolescence — as inadequate deployment processes.

Question 8

In the Wirecard case, BaFin investigated the *journalists* (Financial Times) instead of the company. In the Archegos case, no single regulator could see the total position. What common pattern connects these two regulatory failures?

A. Both involved cryptocurrency

B. Both illustrate regulatory blind spots — in Wirecard's case, the regulator actively defended the company (regulatory capture); in Archegos's case, the family office exemption meant no regulator was *required* to look at total exposure

C. Both were caused by technological failures

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Answer: (B) The common pattern is opacity enabled by regulatory architecture. Wirecard exploited its classification as a "technology company" to avoid banking-level supervision. Archegos exploited the family office exemption from SEC Form 13F disclosure. In both cases, the problem was not that regulators were incompetent, but that the rules created structural blind spots.

Question 9

The Anchor protocol on Terra offered approximately 20% annual yield on UST deposits. The organic yield from borrowing was only 5–7%. Where did the extra yield come from?

A. From traditional bank interest payments

B. From Terra's reserves, which were being depleted at approximately $300 million per month — the 20% yield was a subsidy to attract deposits, not a sustainable return

C. From cryptocurrency mining rewards

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Answer: (B) Anchor's 20% APY was effectively a marketing expense: it bought adoption for UST by paying depositors far more than borrowers generated. The reserve depletion rate ($300M/month) made the yield unsustainable. When reserves approached zero, depositors would flee, triggering the de-peg. The 20% yield was a ticking time bomb.

Question 10

The FTX collapse involved "circular collateral": FTX created the FTT token, Alameda held FTT as collateral to borrow customer funds from FTX. Why was this collateral worthless?

A. Because FTT was a cryptocurrency and all cryptocurrencies are worthless

B. Because FTT's value depended on FTX being solvent — the collateral's worth was contingent on the very entity it was supposed to protect against defaulting; when confidence collapsed, FTT's value collapsed simultaneously

C. Because FTT was denominated in a foreign currency

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Answer: (B) FTT was created by FTX and primarily held by Alameda. Its market value depended on confidence in the FTX ecosystem. When Binance announced it would sell its FTT holdings (November 6, 2022), FTT's price crashed — destroying the very collateral that was supposed to back Alameda's borrowing. The collateral was circular: it could not protect against the risk it was meant to cover.

Question 11

SVB's bank run took approximately 10 hours — $42 billion withdrawn in a single day. Previous bank runs (e.g., Northern Rock, 2007) took days or weeks. What made SVB's run so much faster?

A. SVB had fewer branches

B. Three digital accelerants: (1) VC group chats spread panic in hours, (2) Twitter amplified the fear to millions, and (3) mobile banking enabled instant transfers — no need to queue at a physical branch

C. SVB's depositors were more sophisticated

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Answer: (B) Digital infrastructure did not cause SVB's failure (duration mismatch was the root cause), but it accelerated the run from weeks to hours. Social media enabled coordinated panic without a coordinator: prominent VCs told portfolio companies to withdraw, Twitter amplified the message, and mobile banking made it instant. A pre-digital bank run would have been slowed by physical branch capacity.

Question 12

Knight Capital's "kill switch" took 45 minutes to activate because engineers had to manually identify which of eight servers was running the erroneous code. What modern software practice would have prevented this delay?

- (A) Using a faster programming language
- (B) Implementing a centralized emergency stop (one-click kill switch) that halts all trading across all servers simultaneously, combined with automated position-limit monitoring
- (C) Hiring more engineers
- (D) Running all code on a single server

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Answer: (B) The 35-minute gap between detection (9:40 AM) and kill (10:15 AM) occurred because there was no centralized emergency stop. Engineers had to diagnose each server individually. Post-Knight, the industry adopted automated kill switches, canary deployments (rolling out to one server first), and real-time position-limit monitoring.

Question 13

The lecture maps each crisis to specific course modules. Module 4 (Risk) appears in five of six crises. Why is risk management failure so ubiquitous?

A. Because Module 4 is the longest module in the course

B. Because risk management is the function responsible for identifying, measuring, and mitigating exactly the vulnerabilities that cause crises — when it fails (due to model limitations, organizational incentives, or regulatory gaps), the crisis is almost guaranteed

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D. Because risk management is not important

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Answer: (B) Risk management is the last line of defense. SVB's ALM team should have hedged duration risk. Archegos's prime brokers should have demanded more margin. Knight's operations should have enforced position limits. Terra's designers should have stress-tested the death spiral. In each case, the risk function either failed, was overruled, or was structurally absent.

Question 14

Terra-LUNA's mint/burn mechanism was transparent — anyone could read the smart contract code. Yet it still collapsed. What does this teach about the limits of "code is law"?

- The code was hidden from the public
- Transparency of code does not equal safety of design — the algorithm worked exactly as written, but the design contained a reflexive doom loop (the stability mechanism was backed by an asset whose value depended on stability), which no amount of code transparency could fix
- The collapse was caused by a bug in the code
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Answer: (B) Terra's code was publicly auditable. The problem was not a bug but a design flaw: circular collateral. "Works in code" and "works in a crisis" are different claims. The system was stable 99% of the time, but the 1% event was catastrophic and non-recoverable. Transparency showed *how* it worked, not *whether* it would survive stress.

Question 15

Credit Suisse lost $5.5 billion from the Archegos collapse — more than any other prime broker. Morgan Stanley lost only $0.9 billion. The key difference: Morgan Stanley sold its positions early (within hours), while Credit Suisse waited days. What does this reveal about crisis management?

- A. Morgan Stanley had better trading technology
- B. Speed of response during a crisis determines the magnitude of loss — the first banks to sell their positions recovered more value; those who hesitated (hoping for a recovery or fearing market impact) absorbed the largest losses
- C. Credit Suisse was committing fraud
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Answer: (B) In a liquidation scenario with concentrated positions, the first mover gets the best prices. Morgan Stanley and Goldman Sachs began selling on Friday evening; Credit Suisse held through the weekend hoping conditions would improve. By Monday, prices had cratered. Crisis management is about speed and decisiveness, not about hope.

Question 16

The lecture uses a five-step crisis analysis framework: Trigger → Root Cause → Module Link → Systemic Impact → Regulatory Response. Why does the framework distinguish between "trigger" and "root cause"?

- There is no meaningful difference
- The trigger is the observable event that starts the crisis (e.g., Binance selling FTT), while the root cause is the deeper structural flaw that made the system vulnerable (e.g., commingled customer funds) — addressing only the trigger without fixing the root cause ensures the next crisis
- The trigger is always more important than the root cause
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Answer: (B) Triggers are proximate causes; root causes are structural. SVB's trigger was a Twitter-amplified bank run; the root cause was unhedged duration risk. Knight's trigger was a deployment error; the root cause was absent safety processes. Effective regulation must address root causes, not just react to triggers.

Question 17

After Wirecard, Germany passed the Financial Market Integrity Strengthening Act (FISG), which included mandatory audit firm rotation and expanded BaFin oversight. A critic argues the FISG "addressed symptoms, not root causes." Is this criticism fair?

A. No — the FISG solved all problems

B. The criticism has merit: audit rotation addresses auditor complacency but not auditor incentives (auditors are still paid by the company they audit), and expanding BaFin's scope does not change its enforcement culture — the deeper issue is that the trust chain's incentive structure remains intact

C. The criticism is wrong because regulations always work

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Answer: (B) The FISG improved BaFin's structure and added rotation rules, but the fundamental incentive problem remains: EY was paid by Wirecard, not by investors. Auditors face pressure to maintain client relationships. The FISG changed who watches, but not the economic incentives that determine how carefully they watch.

Question 18

A student examines all six crises and concludes: "The common pattern is that humans are the problem — we should automate everything with smart contracts." Using the Knight Capital case as a counter-example, evaluate this argument.

A. The student is correct — automation solves all problems

B. Knight Capital proves that automation without human oversight creates its own catastrophic risks — a software deployment error caused $440M in losses at $10M per minute, faster than any human could intervene; the solution is not more automation but better guardrails on automated systems

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Answer: (B) Wirecard and FTX were human trust failures. Knight Capital was an automation failure. The lesson is not "humans bad, code good" or "code bad, humans good" — it is that both need guardrails. Human systems need audits and oversight. Automated systems need kill switches, position limits, and canary deployments. The answer is layered defense, not wholesale replacement.

Question 19

SVB had 94% uninsured deposits (above the $250K FDIC limit). After SVB failed, the FDIC guaranteed *all* deposits, including uninsured ones. A student argues: "This creates moral hazard — if the government always bails out depositors, banks have no incentive to manage risk." Evaluate this argument.

- **A** The student is wrong — bail-outs never create moral hazard
- **B** The moral hazard concern is legitimate: guaranteeing uninsured deposits signals that large depositors face no loss, reducing their incentive to monitor bank risk; however, the alternative (letting depositors lose money) risked contagion to other banks, creating a "damned if you do, damned if you don't" dilemma
- **C** The student is correct and there is no counter-argument
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Answer: (B) The student identifies a real trade-off. Full guarantees prevent panic (stabilize the system) but reduce market discipline (depositors stop monitoring bank risk). The FDIC's decision to guarantee all SVB deposits was a crisis response, not a permanent policy — but it set a precedent that future depositors may rely on, weakening the incentive to choose banks carefully.

Question 20

The lecture presents a "crisis pattern cycle": innovation → regulatory gap → excessive risk-taking → crisis → regulation → innovation (and the cycle repeats). Is this cycle inevitable, or can it be broken?

A. The cycle is inevitable and nothing can be done

B. The cycle can be mitigated but probably not eliminated: proactive regulation (regulating based on activity, not label), real-time monitoring (on-chain transparency, social media sentiment), and structural guardrails (mandatory disclosure, position limits, kill switches) can shorten and soften the cycle — but financial innovation will always outpace regulation by some margin

C. The cycle was broken after the 2008 financial crisis

D. Regulation causes crises, so removing regulation would break the cycle

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- (C) The cycle was broken after the 2008 financial crisis
- (D) Regulation causes crises, so removing regulation would break the cycle

Answer: (B) Every crisis in the lecture followed the same pattern: a new financial innovation (FinTech, algorithmic stablecoins, crypto exchanges, algorithmic trading) outpaced regulation, creating a gap exploited by risk-takers. Perfect prevention is unrealistic, but the gap can be narrowed through activity-based regulation, real-time data monitoring, and mandatory safety mechanisms. The goal is shorter, less damaging cycles — not zero cycles.