

CAPSTONE INTERNSHIP PROJECTS CATALOG

2022-2023





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ARE YOU A STUDENT LOOKING FOR A COMPANY TO WELCOME AND GUIDE YOU DURING YOUR GRADUATION INTERNSHIP?

ARE YOU PASSIONATE ABOUT VARIED FINTECH PROJECTS WITH A GLOBAL VISION ?

THEN, YOU ARE IN THE RIGHT PLACE!

For years, axefinance has been receiving final year students as part of their graduation project.

We grant great importance to our interns by facilitating their entry to the professional life and by helping them have a clearer vision on career choices while providing them with valuable advice and technical assistance.





AXE FINANCE, AT A GLANCE

FOCUS

- A global & reputable software vendor: credit & risk automation solutions ACP.
 - Solely focused on its core business: lending digitalization.

EXPERTISE

- Founded in 2004, managed by experts in the Credit & Risk Management
- Combines strong expertise in software engineering and Credit Automation.

VALUE

- High investment in R&D.
- Enjoys a sustained growth since inception.
- Engaged in value-creation to customers.

Employees







Company







OUR SOLUTIONS

axefinance offers ACP, Axe Credit Portal, an Al-based end-to-end digital lending software.

Our Solutions:

- axe Corporate Lending
- axe Retail Lending
- <u>axe Commercial Lending</u>
- Other segments covered:
 - FI's
 - Embedded Finance: POS Financing & BNPL
 - Islamic Finance
 - Community Banking
 - Microfinance
 - Debt collectors
 - Loan servicers
 - Brokers
 - Fintech

Our solutions by credit lifecycle

- KYC
- Loan Origination
- Scoring, Early warning, and Automatic Decision
- Undewriting
- Credit Administration
- <u>Limit Management</u>
- Collateral Management
- Loan Servicing
- Collection
- Provisioning



This catalog destined to final year students, offers a wide range of innovative internship topics within Axefinance.



How To Apply?

- 1. Choose a project topic from the listed opportunities that interests you the most.
- Send your CV and motivation letter to <u>interns@axefinance.com</u> with "INTERN (INCLUDE PROJECT TOPIC & N°)" in the subject line.
- 3. Your motivation letter should include the reasons why you are interested in the chosen project and why you wish to undergo your internship at AxeFinance.

^{*} The first successful selection of CVs will be contacted by the HR Team for technical and HR assessments. We take care in thoroughly reviewing all the received applications.









INTERNSHIP DURATION: 4 MONTHS

KEY RESPONSIBILITIES:

- Identify machine learning and time series models for the forecasting of macroeconomic factors
- Benchmark these models on a real dataset

CANDIDATE PROFILE & REQUIREMENTS:

- Time series
- Machine learning
- Statistics
- Python





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Develop an artificial neural networks to predict applicant's creditworthiness
- Extract eligibility rules from the trained neural networks
- Eligibility rules post processing

CANDIDATE PROFILE & REQUIREMENTS:

- Machine learning
- Deep learning
- Statistics
- Python





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Credit scoring modeling
- Model deployment and monitoring over the time
- Model stability assessment (PSI, Data drift, target drift, model performance, etc.)

CANDIDATE PROFILE & REQUIREMENTS:

- Machine learning
- Deep learning
- Statistics
- Python
- ETL and Dashboarding tools





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Exploring different state of the art models for table extraction and structure recognition
- Preprocessing Data
- Modeling and evaluation for the chosen approach
- Model deployment

CANDIDATE PROFILE & REQUIREMENTS:

- Computer Vision
- Python
- Pytorch, Tensorflow
- Virtual environments
- MMDetection, Detectron





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Exploring different state of the art models for information extraction
- Data preprocessing
- Modeling and evaluation for the chosen approach
- Model deployment

CANDIDATE PROFILE & REQUIREMENTS:

- Computer Vision
- Python
- Pytorch, Tensorflow
- Virtual environments
- Graph Neural Network (GNN)





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Exploring different state of the art models for text segmentation and clustering
- Text preprocessing
- Modeling and evaluating the chosen approach
- Model deployment

CANDIDATE PROFILE & REQUIREMENTS:

- Natural language Processing (NLP)
- Python
- Pytorch, Tensorflow
- Spacy, Transformers





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Exploring different state of the art models for sentiment classification
- Text preprocessing
- Modeling and evaluating the chosen approach
- Model deployment

CANDIDATE PROFILE & REQUIREMENTS:

- Natural language Processing (NLP)
- Python
- Pytorch, Tensorflow
- Spacy, Transformers





INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Explore different state of the art models for text recommendation
- Text preprocessing
- Modeling and evaluation for the chosen approach
- Model deployment

CANDIDATE PROFILE & REQUIREMENTS:

- Natural language Processing (NLP)
- Python
- Pytorch, Tensorflow
- Spacy, Transformers





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Design and implementation of data model
- Design and implementation of ODS,
 Datawarehouse, DataMart's
- Dashboard design and implementation

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to software engineer students, preferably sensitive to credit risk management, with fair knowledge of the below technologies:

- SQL server
- Transact SQL
- Database design, Datawarehouse, Cube
- ETL and dashboarding tools
- Analytics knowledge
- R/Python, DAX, MDX









INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Design and implement of a web application that allows bank users to:
- Define financial models, templates, statements, sheets, and elements along with their attributes
- Create, edit, delete, view, and compare multiple customer financial statements of different types and periods
- Create rules to validate financial entries
- Create appropriate financial ratios based on multiple statements' sheets' elements
- Create and use different methods to forecast customer financials
- Integrate Al based financials

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Assemble a peer comparison scenario for individual or group comparison
- Add comparison items to peer comparison scenario
- Have the system automatically calculate and display peer comparison results
- Should be able to display result grouped by comparison item
- Should be possible to see the standard deviation in the peer comparison results
- Should be possible to see the % change in the peer comparison results from one period to another

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

A covenant is a monitoring tool used to ensure that certain financial elements/ratios remain within contractually thresholds:

- Set new covenant, and view, edit, delete existing covenants set to a counterparty
- Add single or multiple covenant conditions, and view, edit, delete existing covenant conditions mapped to a covenant
- Have the system automatically calculate and display covenant results
- Have the system alert on covenant breaches and initiate appropriate actions
- Add rich text notes at covenant result level

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

Design and implement a web application that allows bank users to:

- Define qualitative scoring templates, and profiles (e.g., ESG, management)
- Define quantitative scoring templates
- Define scoring models combining both qualitative and quantitative scorecards
- Define scoring rules such as the score to set for missing data or outliers
- Perform scoring calculation in real-time or in batches
- View, comment, override, and delete scoring calculations

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

Counterparty structure application enables banks to intuitively capture and manage all types of customer relationships to better manage and litigate counterparty risk.

- Proper understanding of business requirements
- Elaborate user stories
- Design data model
- Select appropriate database technology
- Recommend appropriate UX/UI
- Prepare unit tests
- Develop, test, and deploy application using clean architecture approach

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs
- NoSQL database





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

Loan origination process enables banks to process and analyze a huge amount of data throughout a configurable number stages from pre-qualification to the approval of funding a loan.

- Proper understanding of business requirements
- Elaborate user stories
- Design data model
- Select appropriate database technology
- Recommend appropriate UX/UI
- Prepare unit tests
- Develop, test, and deploy application using clean architecture approach

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs
- NoSQL database





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

Loan servicing allows bank to manage all events that could occur during the lifecycle of an active loan.

- Proper understanding of business requirements
- Elaborate user stories
- Design data model
- Select appropriate database technology
- Select appropriate message broker
- Recommend appropriate UX/UI
- Prepare unit tests
- Develop, test, and deploy application using clean architecture approach

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs
- NoSQL database
- Message broker





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

Credit application processing requires document management capabilities to attach and manage received and/or generated documents. These capabilities can further be extended to managing loan documents during the lifecycle of an active loan.

- Proper understanding of requirements
- Elaborate user stories
- Design data model
- Select appropriate database technology
- Recommend appropriate UX/UI
- Prepare unit tests
- Develop, test, and deploy application using clean architecture approach

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs
- NoSQL database





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

Facility Risk Rating is a grade calculated on a credit facility using complex expressions and value tables involving collateral and facility data. The intern is requested to:

- Understand requirements and elaborate user stories
- Design data model
- Recommend appropriate UX/UI
- Prepare unit tests
- Design a fine-grained configuration parameters and group of parameters
- Design the FRR calculation engine
- Develop, test, and deploy application using clean architecture approach

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- Dotnet
- Rest APIs





INTERNSHIP DATES/DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

axelAM should be designed to bring to ACP suite and axe studio tools the capability to offer to our users the right access at the right time no matter which channel they decided to connect from:

- axelAM should provide following services:
 - Authentication, SSO, MFA, identity federation, axelAM for bank users, partners, and customers
 - Centralized fine grained access control to ACP suite application, and axe studio tools resources and APIs.
- axelAM should be able to integrate to main IAM solutions of the market

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to software engineer candidates, preferably sensitive to application security management, and with fair knowledge of below technologies:

- C#
- Angular
- Dotnet
- Identity and Access Management
- Identity Federation
- MFA
- Single Sign On



INTERNSHIP OPPORTUNITIES PRODUCT MANAGEMENT



INTERNSHIP FIELD: PRODUCT MANAGEMENT - DEPARTMENT: PRODUCT



INTERNSHIP DURATION: 3 MONTHS - MULTI INTERN PROJECT

KEY RESPONSIBILITIES:

- Design and implement data model
- Design and implement ODS,
 Datawarehouse, and DataMart's
- Design and implement dashboards

CANDIDATE PROFILE & REQUIREMENTS:

- SQL server
- Odata source
- Transact SQL
- Database design, Datawarehouse, Cube
- ETL and dashboarding tools
- Analytic Techniques
- R/Python, DAX, MDX



INTERNSHIP FIELD: PRODUCT MANAGEMENT - DEPARTMENT: PRODUCT

PROJECT TOPIC 2: AUTOMATE ON-PREMISE DEPLOYMENT OF .NET CONTAINERIZED APPLICATIONS USING CI/CD PIPELINES

INTERNSHIP DURATION: 6 MONTHS

KEY RESPONSIBILITIES:

- Install and configure docker environment for windows containers
- Design and implement CI/CD pipelines to build, deliver, and deploy ACP docker images to on-premise environments

CANDIDATE PROFILE & REQUIREMENTS:

- Docker
- Azure DevOps
- Security & Infrastructure basics
- YAML
- GIT
- .NET basics
- IIS web-site création and configuration



INTERNSHIP FIELD: OMNI-CHANNELS - DEPARTMENT: PRODUCT



INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- UX/UI design for myACP
- Work with design lead to translate research findings into design artifacts, including personas, journey maps, business requirements and constraints, sketches, user flows, sitemaps, wireframes, and lowand high-fidelity mockups and prototypes

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to IT or Multimedia students with fair knowledge of the below:

- Understanding of design thinking methods and best practices
- Able to participate in user research and user testing to guide and validate design decisions
- Prototyping skills using Adobe XD, or other UX/UI Design Software
- UI design skills including color psychology, branding, typography, and style guides
- Basic understanding of HTML, JavaScript, and CSS is a plus



INTERNSHIP FIELD: OMNI-CHANNELS - DEPARTMENT: PRODUCT



INTERNSHIP DURATION: 4 - 6 MONTHS

KEY RESPONSIBILITIES:

- Use ACP real-time communication framework and library to implement below omnichannel capabilities and embed them across ACP applications suite as well as axe studio tools:
- Text chat
- Chat group
- Voice chat with recording capabilities
- Group call
- Video conferencing
- Screen sharing

CANDIDATE PROFILE & REQUIREMENTS:

- C#
- Angular
- lonic
- Dotnet
- Rest APIs
- Socket programming
- Android/IOS



INTERNSHIP FIELD: OMNI-CHANNELS - DEPARTMENT: PRODUCT



KEY RESPONSIBILITIES:

- Develop on-the-spot limit approval capabilities (e.g. limit excess)
- Group level limit structure visualization and browsing
- Develop the capability to configure early warning signals' rules
- Configure ACP notification system to push alerts to the mobile app
- Rethink the current "Risk Concentration" dashboard to be "mobile first" design
- Embed Microsoft Power BI dashboard within the mobile app

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to software engineer students, preferably sensitive to credit risk management, with fair knowledge of the below technologies:

- C#
- Angular
- lonic
- Dotnet
- Rest APIs
- Microsoft power BI
- Android/IOS



INTERNSHIP OPPORTUNITIES INTEGRATION



INTERNSHIP FIELD: INTEGRATION - DEPARTMENT: IE

PROJECT TOPIC 1: API STANDARD CONNECTOR
INTERNSHIP DATES / DURATION: 4-6 Months

KEY RESPONSIBILITIES:

 Develop connector between ACP APIs and Kafka middleware

CANDIDATE PROFILE & REQUIREMENTS:

- Kafka
- .NET Core



INTERNSHIP FIELD: INTEGRATION - DEPARTMENT: IE

PROJECT TOPIC 2: TIMESHEET MANAGEMENT
INTERNSHIP DATES / DURATION: 4-6 Months

KEY RESPONSIBILITIES:

 Develop Axe Finance Timesheet with Bl and integrate it to other internal tools

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to software engineer and BI students with fair knowledge of the below technologies:

- Angular
- .NET Core
- Power BI



INTERNSHIP FIELD: INTEGRATION -DEPARTMENT: IE

PROJECT TOPIC 3 : AZURE - DEVOPS

INTERNSHIP DATES / DURATION: 4-6 Months

KEY RESPONSIBILITIES:

 Create a pipeline between ACP DEVOPS and AZURE Environment

CANDIDATE PROFILE & REQUIREMENTS:

- Azure
- Devops







INTERNSHIP FIELD: QA AUTOMATION -DEPARTMENT: QA



INTERNSHIP DATES/DURATION: 4-6 MONTHS

KEY RESPONSIBILITIES:

- Create an advanced loan calculator web application
- Automate mass credit extraction
- Calculate metrics that compare and validate the created application.

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to IT or engineering students with fair knowledge of the below technologies:

- R: Creating the web application
- Java: Automating the process







INTERNSHIP FIELD: BUSINESS ANALYTICS-DEPARTMENT: PROFESSIONAL SERVICES



INTERNSHIP DURATION: 3-6 MONTHS

KEY RESPONSIBILITIES:

- Design and productization of a pricing guidelines system
- Evaluate the overall profitability of a relationship between a credit customer and the bank through maximizing the Economic Profit and Risk-Adjusted Return on Capital by allowing the user to manage suitable business plans
- Calculate several loan prices (Recommended, 25th Percentile price, 75th Percentile price, 95th Percentile price, Product RAROC and New Client RAROC)

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to Business Analytics and Finance students.



INTERNSHIP FIELD: BUSINESS ANALYTICS - DEPARTMENT: PROFESSIONAL SERVICES



KEY RESPONSIBILITIES:

INTERNSHIP DURATION: 3-6 MONTHS

Design and productization of an alternative rating framework for customers whose risk characteristics cannot be captured with any normal model (Customers classified as SM or NPL, Customers who have trouble debt restructured for less than one year, Customers with no available financial statements) and productization of a pricing guidelines system

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to Business Analytics and Finance students.



INTERNSHIP FIELD: BUSINESS ANALYTICS - DEPARTMENT: PROFESSIONAL SERVICES



PROJECT TOPIC 3: CONSTRUCTION AND REAL ESTATE RATING MODEL

INTERNSHIP DURATION: 3-6 MONTHS

KEY RESPONSIBILITIES:

- Design and productization of a construction/real estate rating model:
- (Borrower loan rating aggregation of projects loan ratings)

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to Business Analytics and Finance students.



INTERNSHIP FIELD: INTEGRATION -DEPARTMENT: PROFESSIONAL SERVICES

PROJECT TOPIC 4: SHAREHOLDING AND DIRECTOR INTEGRATION API

INTERNSHIP DURATION: 3-6 MONTHS

KEY RESPONSIBILITIES:

 Design and implementation of generic integration between a loan origination system and shareholders/directors database provider (Auto generation of group structures, shareholding structures and customer relationships)

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to IT or engineering students with fair knowledge of the below technologies:

- .NET Core
- SQL server



INTERNSHIP OPPORTUNITIES HUMAN RESOURCES



INTERNSHIP FIELD: PEOPLE MANAGEMENT - DEPARTMENT: HUMAN RESOURCES



INTERNSHIP DURATION: 4-6 MONTHS

KEY RESPONSIBILITIES:

Provide support to the HR team in their day to day responsibilities:

- Create and improve material for recruitment (Optimize candidate database, technical testing Formats)
- Support the hiring team in the recruitment process (post and update vacancies, process further the shortlisted profiles, coordinate interviews...)
- Support on onboarding
- Support on daily HR Operations and record-keeping
- Support on certain HR projects

CANDIDATE PROFILE & REQUIREMENTS:

Internship project recommended to business management or HR students who have relevant skills and interests.

Requested competencies:

- Good English & French commend
- Good knowledge in MS- Excel
- Team work oriented
- Adaptability & Flexibility
- Creativity



INTERNSHIP OPPORTUNITIES MARKETING



INTERNSHIP FIELD: INSIDE SALES -DEPARTMENT: MARKETING



INTERNSHIP DURATION: 6 MONTHS

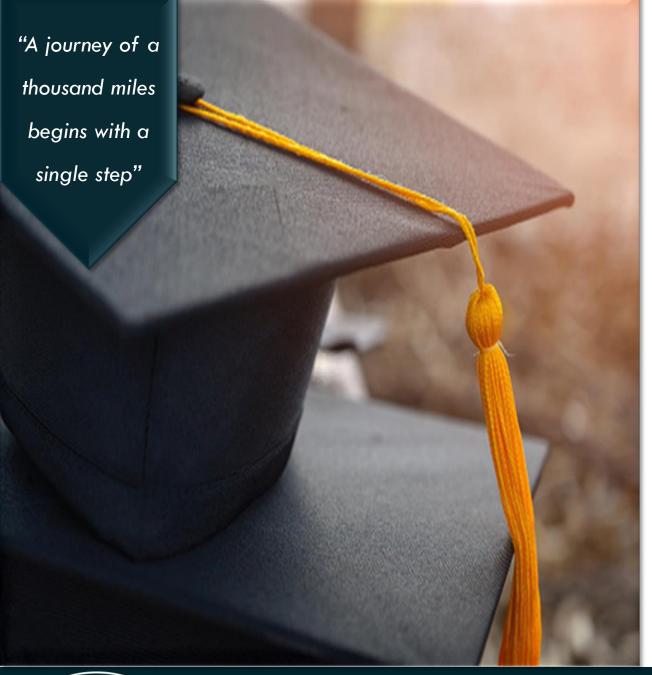
KEY RESPONSIBILITIES:

- Create an automated lead scoring workflow from data import to dispatch on ACP
- Data mapping: integrate CRM activities and marketing tools to ACP

CANDIDATE PROFILE & REQUIREMENTS:

Internship recommended to business or marketing oriented students with a major in IT and a Minor in Finance.





Contact us

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