IT314 - PROJECT GROUP 24
TASK 3 - SPRINTS

Sprint 1: User Account Management

Focus on the foundational user authentication and account management features.

Goals:

- Set up user authentication (sign up, login, password reset).
- Implement profile management (update name, email, password).
- Design and implement a user dashboard with basic metrics.

Deliverables:

- User authentication module.
- Profile management interface.
- Basic dashboard setup.

Time: 2-3 weeks
Priority: Critical, as users must authenticate before accessing other features.
Functional Points for Sprint 1
Sprint 1: User Authentication, Profile Management, and Basic Dashboard

---

External Inputs (EI):

- User login form (simple) = 3 FP
- User registration form (average) = 4 FP
- Password reset (simple) = 3 FP
- Profile editing (average) = 4 FP

External Outputs (EO):

- User dashboard display (simple) = 4 FP

Internal Logical Files (ILF):

- User data (average) = 10 FP

External Interface Files (EIF):

- Email service / notifications (simple) = 5 FP

Total Functional Points for Sprint 1: 33 FP

Sprint 2: Inventory Management

Focus on building the product inventory features for registered users.

Goals:

- Implement inventory management.
- Integrate inventory data with the user dashboard for overview.

Deliverables:

- Product inventory management system.
- Dashboard update to display inventory.

Time: 2-3 weeks
Priority: High, as managing product inventory is crucial for registered users.
Functional Points for Sprint 2
Sprint 2: Inventory Management and Dashboard Integration

External Inputs (EI):

- Product creation (simple) = 3 FP
- Product update (simple) = 3 FP
- Product delete (simple) = 3 FP

External Outputs (EO):

- Inventory list display on dashboard (average) = 5 FP

Internal Logical Files (ILF):

- Inventory data (average) = 10 FP

Total Functional Points for Sprint 2: 24 FP

Sprint 3: ML Model Development

This sprint focuses on developing the machine learning model that will drive sales forecasting.

Goals:

- Develop and train the ML forecasting model.
- Validate the model using historical data.
- Set up a feedback loop for continuous model improvement.

Deliverables:

- Working machine learning model for sales forecasting.
- Model performance metrics (e.g., RMSE) and accuracy validation.

Time: 2-3 weeks
Priority: Critical, as the machine learning model is key to sales forecasting and business decision-making.
Functional Points for Sprint 3
Sprint 3: ML Model Development and Forecasting

External Inputs (EI):

- Historical sales data input for training (average) = 4 FP
- Feedback data input for continuous improvement (average) = 4 FP

External Outputs (EO):

- Model performance metrics display (average) = 5 FP

Internal Logical Files (ILF):

- Historical sales data (average) = 10 FP

External Interface Files (EIF):

- External data source for model validation (average) = 7 FP

Total Functional Points for Sprint 3: 30 FP

Sprint 4: Forecasting Feature Implementation

Focus on integrating the ML forecasting model into the system and building the user-facing forecasting features.

Goals:

- Integrate the ML model to forecast sales.
- Build a dashboard displaying sales forecasts.
- Enable input for profit goals and marketing budgets for optimized recommendations.

Deliverables:

- Sales forecasting feature on the dashboard.
- Budget and inventory recommendations based on profit goals and marketing budgets.

Time: 2-3 weeks
Priority: High, as integrating the forecasting model and providing actionable insights is essential for business planning.
Functional Points for Sprint 4: Forecasting Feature Implementation

---

External Inputs (EI):

- Forecast scenario input (average) = 4 FP

External Outputs (EO):

- Sales forecast display on the dashboard (complex) = 7 FP
- Budget and inventory recommendations (average) = 5 FP

Internal Logical Files (ILF):

- Forecast data from ML model (complex) = 15 FP

External Interface Files (EIF):

- External data source for sales and marketing trends (simple) = 5 FP

Total Functional Points for Sprint 4: 36 FP

Sprint 5: Retail Trends Module

Focus on developing the feature that shows retail trends based on various factors.

Goals:

- Build functionality to display trends by category, season, and region.
- Design filtering options for category, season, and region.
- Ensure trends are presented visually (charts, graphs).

Deliverables:

- Retail trends dashboard.
- Filtering options for categories, seasons, and regions.
- Graphical representation of retail trends.

Time: 2-3 weeks
Priority: High, as displaying retail trends is essential for data-driven decision-making.
Functional Points for Sprint: Retail Trends and Visualization

---

External Inputs (EI):

- Category filter input (simple) = 3 FP
- Season filter input (simple) = 3 FP
- Region filter input (simple) = 3 FP

External Outputs (EO):

- Retail trends dashboard display (average) = 5 FP
- Graphical trends representation (charts, graphs) (average) = 5 FP

Internal Logical Files (ILF):

- Retail trends data (average) = 10 FP

External Interface Files (EIF):

- External source for regional sales data (simple) = 5 FP

Total Functional Points: 34 FP

Sprint 6: Forecasting Accuracy and Feedback Management

Focus on improving the accuracy of the sales forecast model and handling user feedback.

Goals:

- Implement forecast accuracy monitoring (accuracy metrics, comparison with actual data).
- Build feedback management system for user feedback.

Deliverables:

- Forecast accuracy module (dashboard, comparison charts).
- User feedback management system.
- UX improvements based on feedback.

Time: 2-3 weeks
Priority: Critical, as improving forecast accuracy and managing user feedback are vital for platform success.
Functional Points for Sprint 6: Forecasting Accuracy and Feedback Management

---

External Inputs (EI):

- User feedback input form (simple) = 3 FP
- Actual sales data input for forecast comparison (average) = 4 FP

External Outputs (EO):

- Forecast accuracy comparison charts (average) = 5 FP
- User feedback display for admins (simple) = 4 FP
- UX updates based on feedback (simple) = 4 FP

Internal Logical Files (ILF):

- Forecast accuracy data (average) = 10 FP
- User feedback data (average) = 10 FP

Total Functional Points: 40 FP

Sprint 7: Machine Learning Model Updates

Focus on ensuring that the machine learning model is regularly updated with new data to maintain prediction accuracy.

Goals:

- Set up automated data updates for the model.
- Implement version control and monitoring for data accuracy.
- Retrain model based on new data to improve forecasts.

Deliverables:

- Automated data update system for the forecasting model.
- Monitoring and logging of data updates.
- Model retraining process.

Time: 2-3 weeks
Priority: Critical, as regularly updating the machine learning model is essential for maintaining accurate sales forecasts.
Functional Points for Sprint 7: Machine Learning Model Updates

---

External Inputs (EI):

- New data input for model retraining (average) = 4 FP
- Model version control input (simple) = 3 FP

External Outputs (EO):

- Monitoring and logging of data updates (average) = 5 FP
- Updated forecast outputs post-retraining (average) = 5 FP

Internal Logical Files (ILF):

- Model update log data (simple) = 7 FP
- Retrained model data (complex) = 15 FP

External Interface Files (EIF):

- External data source for new sales data (simple) = 5 FP

Total Functional Points for Sprint 7: 44 FP

SPRINT-1 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	2 x 3	2 x 4	-	14
External Outputs(EO)	1 x 4	-	-	4
External Query(EQ)	-	-	-	-
Internal Logical Files(ILF)	-	1 x 10	-	10
External Interface Files(EIF)	1 x 5	-	-	5
Total				33

SPRINT-2 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	3 x 3	-	-	9
External Outputs(EO)	-	1 x 5	-	5
External Query(EQ)	-	-	-	-
Internal Logical	-	1 x 10	-	10

Files(ILF)				
External Interface Files(EIF)	-	-	-	-
Total				24

SPRINT-3 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	-	2 x 4	-	8
External Outputs(EO)	-	1 x 5	-	5
External Query(EQ)	-	-	-	-
Internal Logical Files(ILF)	-	1 x 10	-	10
External Interface Files(EIF)	-	1 x 7	-	7
Total				30

SPRINT-4 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	-	1 x 4	-	4
External Outputs(EO)	-	1 x 5	1 x 7	12
External Query(EQ)	-	-	-	-
Internal Logical Files(ILF)	-	-	1 x 15	15
External Interface Files(EIF)	1 x 5	-	-	5
Total				36

SPRINT-5 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	3 x 3	-	-	9
External Outputs(EO)	-	2 x 5	-	10
External Query(EQ)	-	-	-	-

Internal Logical Files(ILF)	-	1 x 10	-	10
External Interface Files(EIF)	1 x 5	-	-	5
Total				34

SPRINT-6 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	1 x 3	1 x 4	-	7
External Outputs(EO)	2 x 4	1 x 5	-	13
External Query(EQ)	-	-	-	-
Internal Logical Files(ILF)	-	2 x 10	-	20
External Interface Files(EIF)	-	-	-	-
Total				40

SPRINT-7 : FUNCTION POINTS

Functional Points	Simple	Average	Complex	Total
External Inputs(EI)	1 x 3	1 x 4	-	7
External Outputs(EO)	-	2 x 5	-	10
External Query(EQ)	-	-	-	-
Internal Logical Files(ILF)	1 x 7	-	1 x 15	22
External Interface Files(EIF)	1 x 5	-	-	5
Total				44

Total Functional Points: FP(Sprint 1) + FP(Sprint 2) + FP(Sprint 3) + FP(Sprint 4)
+ FP(Sprint 5) + FP(Sprint 6) + FP(Sprint 7);
: 33 + 24 + 30 + 36 + 34 + 40 + 44
: 241

Total Unadjusted Functional Points (UFP) = 241

CALCULATION FOR COMPLEXITY FACTOR :

Complexity Factor	Value
Backup and recovery	4
Data Communication	3
Distributed Processing Function	2
Is performance critical?	4
Existing operating environment	3
On-line data entry	4
Input transaction built over multiple screens	3
Master files updated on-line	4
Complexity of inputs, outputs, files, inquiries	4
Complexity of processing	5
Code design for reuse	3
Are conversion/installation included in design?	2
Multiple installations	1
Application designed to facilitate change by the user	4
ΣF_i	46

TECHNICAL COMPLEXITY FACTOR (TCF) :

$TCF = 0.65 + (0.01 * (\Sigma F_i))$
$TCF = 0.65 + (0.01 * 46) = 1.11$

ADJUSTED FUNCTION POINTS (AFP) :

AFP = UFP * TCF
AFP = 241 * 1.11 = 267.51

TIME CALCULATION :

Hours required per FP = 6 hrs (approx)
Assuming that all team members work 1.5 hrs/day → 13.5 hrs of work/day

Sprint number	Adjusted FP	Days required (approx)
1	33*1.11 = 36.63	17 days
2	24*1.11 = 26.64	12 days
3	30*1.11 = 33.3	15 days
4	36*1.11 = 39.96	18 days
5	34*1.11 = 37.74	17 days
6	40*1.11 = 44.4	20 days
7	44*1.11 = 48.84	22 days
	Total AFP = 267.51	Total Days = 121 days