# Implementing Business Process

## 1. Implenting Business Processes

* can be used for
  + preserving data quality
  + automatic processes
  + keeping processes from getting ‘stuck’
  + keeping systems in sync
  + auditing
* Features
  + Formula fields
  + Validation rules
  + Approval process
  + Workflow Rules
  + Outbound Messaging
  + Field History Tracking
  + Setup Audit Trail
* Functions
  + ischanged – compares with previous value and returns true if it is changed
  + priorvalue – returns the previous value of the field
  + isnew – checks if a formula is running during creation of new record and returns true if it is
  + ispickval – determines if the value of pickuplist is equal to specified string
  + regex – string used to describe the format of the string according to certain syntax rules. It compares a text field to regular expression and returns true, if there is a match
  + vlookup – returns value by looking up a record value in a custom object. It checks against a key and returns value from that key.
  + isnumber – returns true if a text value is number
  + case – checks against a series of values
  + image – inserts an image
  + htmlencode – encodes text stings and merge field values for use in html (e.g. ‘<‘)
  + jsencode – encodes text strings and merge field values for use in javascript (e.g. apostrophe)
  + jsinhtmlencode – encodes text strings and merge field values for use in javascript within html tags
  + urlencode – encodes text strings and merge field values for use in URLs
* System Logs
  + display logging info, cumulative limits and source code of transaction
  + used for debugging code snippets
  + used to view debug log or execute anonymous code blocks
  + display system resource info
* Log levels
  + from lowest to highest
  + Error – lowest, produces distinct results and only error messages
  + warn – warn and error
  + info – info, warn and error
  + debug – includes low level and calls to system.debug
  + Fine/Finer – system.debug, dml, soql/sosl, entrance and exit
  + Finest – includes all messages in previous levels and on apex scripts
* Debug Logs
  + contain info on database changes, automated workflow processes, validation rules
  + request-response xml, apex script errors, and resources used by an apex script
  + records errors and system processes that occur in an org
  + can be retained and managed for specific users
  + 20 logs can be retained for an org, when max is reached, oldest one is overwritten
  + debug log is different system log
  + system log refers to console link at the top of the page
  + underlying logging system is same
  + sysetm log is live console, debug log is persistent store

## 2. Preserving Data Quality

* Validation Rules
  + used to verify that the data entered meets the standards before the user saves the record.
  + Can contain formulas or expressions that evaluate the data in one or more fields
  + return true or false
  + are executed for fields that are stored in the object, but not part of the displayed page layout
* can be used for
  + enforce conditionally required fields
  + enforce required data formats
  + enforce data consistency
  + prevent data loss
* can be used in conjunction with a roll-up summary field can be used to prevent users from adding or deleting records

## 3. Automating Business Processes with Workflow

* Workflow Rules
  + Entry Criteria then Immediate Actions or Time dependent actions
  + Steps
    - Specify the object (both standard & custom objects are ok)
    - Select Evaluation Criteria
      * only when a record is created
      * when it’s created or edited and now meets the cirteria
      * every single time the record is created or updated
    - Define rule criteria
      * filters or formulas
    - Workflow Actions: immediate or later time
      * Tasks – can be assigned to user, role or record owner
      * Email Alerts – can send email to one or more recipients (from address can be current user address or org wide address)
      * Field Updates – can update a field value on a record (including record type/owner)
      * Outbound Messages – can send specific info to designated endpoint in form of API/SOAP message
    - Time-Dependent Workflow
      * triggered depending on elapsed time (evaluated off of any date field in Salesforce)
      * time-dependent actions have a time trigger
      * the action is queued to fire
    - Some considerations
      * cannot use time-dependent workflow when a rule is set for evaluation, every time a record is created or updated
      * when a new workflow rule is created, it does not affect existing records
      * can monitor and remove pending actions by viewing the time-dependent workflow queue
      * if a record that has an action pending against it in the time-based workflow queue is modified so that the record no longer meets the criteria or the timing changes, the action will be updated in the queue
      * if a record no longer meets the time-based workflow rule criteria, the action is removed from queue

## 4. Automating business processes with Approval Processes

* automates routing of records for approval
* contain one or more steps and can be logically split into 6 steps
* not automatically sent for approval, user has to submit
* steps
  + process definition
    - it is determined which records should enter the process and what settings should apply to the whole process.
  + initial submission actions
    - developers decide what happens to a record after it is submitted for approval – actions are locking a record, assigning a task, sending an email, updating a field, sending an outbound message
  + step definition
    - developers determine whether all records should enter the step or whether records only meeting the criteria are chosen.
      * if later is chosen, developer defines the criteria for entry to the step. developer also assigns the approver and determine whether the approver can delegate
      * if there are multiple steps, developers can decide what should happen if a record is rejected at a step after the first step: should it go back one step, or should it be considered a final rejection
  + final rejection actions
    - developers define the actions to be taken when a record is rejected
    - actions are: unlock a record, assign a task, send an email, update a field, send an outbound message
  + final approval actions
    - developers define actions to be taken when a record is approved
    - actions are: unlock a record, assign a task, send an email, update a field, send an outbound message
  + recall actions
    - developers define actions to be taken when a record is recalled from the process.
* Workflow Rule vs Approval Process
  + Workflow rule
    - are triggered upon save
    - consist of one set of criteria and actions
    - can be modified or deleted
  + Approval process
    - triggered only when a user clicks submit for approval
    - consist of multiple steps, have entry criteria, step criteria and step actions; have initial submission actions, rejection and approval actions and actions for each step
    - some attributes can’t be modified, processes must be deactivated before they can be deleted
* Skipping steps
  + allows developers to skip steps within an approval process based on specific criteria
  + skip step is a step that has criteria defined to determine whether or not approval is required
  + 3 options
    - go to next step
    - approve record
    - reject record
  + considerations
    - Go to next step” option is only available when editing a step that already has an ensuing step (so first create ensuing step)
    - selection the “go to next step” option in a step and subsequently delete all ensuing steps, sf changes the step to automatically reject record, if the step criteria are not met
    - selecting the “go to next step” in the first step when the record does not meet the criteria for any of the steps in the approval process, rejects the record
* Parallel approval process
  + can send approval upto 25 different users simultaneously
* Dynamic Approval Process
  + Used to route records for approval based on complex approval matrices
  + Used to route approval requests to users listed in lookup fields on the record requiring approval
  + Steps
    - create a lookup fields on the object beign approved
      * uses lookup relationship
      * if it requires 3 approvers, then create 3 lookup relationships
    - Create a custom object as an approval matrix
    - Populate the approval matrix
    - Create Apex code to fill in the lookup fields from the approval matrix
    - Create or update an approval process to utilize the new lookup fields
* Automated processes occur in the following order
  + Validation Rules->Assignment rules->Auto-Response rules->Workflow rules->Escalation rules

## 5. Auditing Processes

* Setup Audit Trail
  + tracks changes made to the setup of an org
  + lists the date of the change, the name of the user who made the change and a description of the change
  + displays 20 most recent changes
  + tracks changes for 180 days
  + can choose upto 20 fields per object for tracking changes
* Field History Tracking
  + allows to track the history related lists for cases, contacts, leads, opportunities, solutions, accounts, contracts, and custom objects
  + modification to any standard or custom field, whose history is set to be tracked, results in a new entry in the History related list
  + for most field types, both the old and new values are captured in the History related list; however those values are not tracked for long text area and multi-select picklist type fields
  + tracks changes for upto 20 fields
* 3 tools
  + debug logs, setup audit trail, field history