

## CIS 3375: Fall, 2017 COBOL PROGRAM #3 SPECIFICATIONS

### Due Dates & Times:

#	COBOL Program Assignment	Specification Review	Prelim (1.5wks)	Prelim (L) (2wks)	Final (2.5wks)	Final (L) (3wks)
3	My 3 <sup>rd</sup> COBOL Program *Intermediate Skill Level*	10/19/2017	10/26/2017 By 3:30pm	10/31/2017 By 3:30pm	11/07/2017 By 3:30pm	11/09/2017 By 3:30pm

**Objective:** Medium Skill Level COBOL Batch Program

**References:** All previous Labs including Programs#1 & 2

**Check Figures:** Some Check-Figures WILL be provided to help you validate your work!

### Delivery Options for both your Preliminary and Final Program Packets:

1. McCoy 332 (Classroom) during class time
2. McCoy 409 (Kevin Jetton's office) anytime during office hours
3. McCoy 404 (CIS Department office) to my attention

### Deliverables:

1. Preliminary Packet of Materials (stapled or binder clipped together)—**NO TRACS!**
  - a. Cover page titled "Program 3 Prelim" with your name and course
  - b. Directory of IBM host files (PDS and member name)
  - c. Printout of the Cobol Compile Listing (Refer to the PRINT Guidelines)
2. Final Packet of materials (with binder clip to attach them ALL together)+**TRACS!**
  - a. Cover page titled "Program 3 Final" with your name and course
  - b. Directory of IBM host files (Sequential & PDS/member names)
  - c. Reference the Job Name & Job Number for your FINAL Submission:
    - i. Final Program Compile Job
    - ii. Final Program Execution JCL/Job
  - d. Printouts of all the 4 items below that you ALSO submitted to TRACS and don't forget to refer to the PRINT Guidelines)
3. TRACS Assignment Tab (Program#1) for/by the FINAL Deadline date/time
  - a. Pgm3-LnameFname-Compile.txt
  - b. Pgm3-LnameFname-Report.txt
  - c. Pgm3-LnameFname-UpdFile.txt
  - d. Pgm3-LnameFname-VTOC (PDF, Visio, Word, PPT....)
4. TSO/ISPF Libraries by the FINAL Deadline date/time which I will view online
  - a. KC03xxx.LANG.SOURCE(PROG03)
  - b. KC03xxx.JCL(PROG03)

**Scenario:** Bobcat Bank needs a Loan Amortization “utility” program wherein the parameters of a proposed or real loan can be passed to the program and a beautiful loan amortization schedule prints out for the customer and/or their loan file.

**Objectives:**

Given an input file of loan parameters, you are to generate a customized loan amortization schedule for the borrower showcasing each monthly payment over the life of the loan as it splits between principal and interest and the resulting ending balance.

HOWEVER there “may” be bad data in the input file like non-numeric fields when they should be, invalid or missing loan types and invalid dates. So, you need to **VALIDATE** all input fields appropriately. If a loan amortization requires record has one or more issues, report them **ALL** on the Exception Report and do not process it but go on to the next request record. In the event that there are no exception conditions to report, the report needs to still be generated stating such!

**Specifications:**

- I. Program INPUT file:
  - a. **DSN=KC02317.CIS3375.PROG03.INPUT.FILE**
  - b. This file contains the details of the loan for which an amortization schedule is needed
- II. PROCESSES:
  - a. Read **ALL** the Loan Amortization Request Records
  - b. Validate the Loan Record fields and produce an exception report for any issues and categorize them (Fatal .vs. Warning):
    - i. Fatal Conditions:
      - 1. Missing/Non-Numeric APR
      - 2. Missing/Non-Numeric Term
      - 3. Missing/Non-Numeric Principal Amount
    - ii. Warning Conditions:
      - 1. Loan Type not found in Table
  - c. For each **VALID** Loan Amortization Request Record:
    - i. Start their loan amortization schedule on a new/separate page (#1)
    - ii. Create a summary line(s) of the general loan values
    - iii. Produce a detailed print line for **EACH** loan payment over the life of the loan that showcases the payment details
    - iv. **TOTAL** the payment details over the life of the loan
- III. OUTPUT's: (2 reports)
  - a. Loan Amortization Schedule
  - b. Loan Amortization Request Exception Report

**COBOL CODING LOGIC Hints:** PERFORM 30000-PRINT-LOAN-PYMTS  
VARYING WS-PYMT-NR FROM 1 BY 1  
UNTIL WS-PYMT-NR > WS-MOS-TERM  
END-PERFORM.

**Sample Execution JCL: KC02317.CIS3375.JCL(PROG03)**

**FILE #1 LAYOUTS/SPECIFICATIONS: Borrower Input File****INPUT: KC02317.CIS3375.PROG03.INPUT.FILE**

<b>Fld#</b>	<b>Cols</b>	<b>Field Name</b>	<b>Field Type</b>
1	1-40	Borrower Name	Alphanumeric
2	41-45	Loan Type	Alphanumeric
3	46-56	Principal Amount	Numeric (length 11 w/ 2 decimal places)
4	57	Blanks	
5	58-61	<b>Term (in years)</b>	Numeric
6	62	blanks	
7	63-66	<b>APR</b>	99V99 (%) or V9999 (Factor)
8	67	Blanks	
9	68-75	1 <sup>st</sup> Payment Date	MMDDCCYY *All the 1 <sup>st</sup> of the Month (FYI)
10	76-80	blanks	

**Loan Types: (Code as either a TABLE in your program or use EVALUATE)**

<b>Loan Type</b>	<b>Description</b>
100N	New Car
100U	Used Car
200	Boat
300	Signature Loan
400	R/V
500	Motorcycle
600	Mortgage
700	Home Equity
800	Home Improvement

**Functions and Formulas:**

\*Note: the mathematical model can be done in excel with IPMT and PMT functions but you have to code it using the formulas below and be “very mindful” of rounding and the difference between an APR (Annual Percentage Rate) and a Monthly Interest Rate (hint: APR expressed as a factor / 12)

**1. Regular Monthly Payment =  $A * i * (1 + i)^n / ((1 + i)^n - 1)$**

Where: A = Principal Amount of the Loan  
i = monthly interest rate  
n = number of monthly payments

**2. Interest Due =  $i * \text{Beginning Principal Balance}$**

**3. Principal Amount (portion of the monthly payment applied to principal)**  
= Monthly Payment Amount  
– Interest Due (previously calculated)

**4. Beginning Principal Balance = Initial Principal Balance for this payment which is the SAME as the ENDING Principal Balance for the previous payment!**

**5. Ending Principal Balance = Beginning Principal Balance**  
– Principal Amount this payment (#3)

**DETAIL REPORT Content: (things to INCLUDE):**

- Heading Line 1: Run Date & Time (Left Justified)  
Title "Bobcat Bank" (centered)  
Page # (Literal and the actual page #)
- Heading Line 2: "PROGRAM #3: " then <YOUR NAME> left justified  
Title "Loan Amortization Schedule"
- Heading Line 3: Blank
- Title Line 1-2: Column Headings as appropriate
- Title Line 3: Blank line prior to the detail print lines
- Summary Line: Loan basics from the input record like:
- Borrower Name
  - Loan Type (Code and Description)
  - Principal Amount
  - Loan Term (in Years and Months)
  - APR
  - Regular Monthly Payment
- \*\*overflow situation:** In the event that the amortization schedule for a given loan takes up MORE than one single page – you need to re-print the summary line PRIOR to you printing the next detail payment line for the next payment.
- Detail Line: for EACH Payment over the life of the loan with headings!
- Payment #
  - Payment Due Date
  - Beginning Principal Balance
  - Monthly Payment Amount
  - Interest Payment (DUE) for this payment
  - Principal Payment (portion) for this payment
  - Ending Principal Balance
- Loan Totals: Summarize these payment fields for ALL payments for the given loan:
- Total Payments
  - Total Interest Paid
  - Total Principal Paid

**EXCEPTION REPORT Content: (things to INCLUDE):**

- Heading Line 1: Run Date & Time (Left Justified)  
Title "Bobcat Bank" (centered)  
Page # (Literal and the actual page #)
- Heading Line 2: "PROGRAM #3: " then <YOUR NAME> left justified  
Title "Loan Amortization Schedule Request Exceptions"
- Heading Line 3: Blank
- Title Line 1: Column Headings as appropriate
- Title Line 3: Blank line prior to the detail print lines
- Detail Line: Print Request notable fields and a MESSAGE of what is wrong (as in Comments)
- \*\*Note:** If there are NO exceptions to print – print a message stating such!