**CSCI 360-1/PE1 Assignment 8 – Introduction to Packed Decimal Spring 2022**

**(75 points)**

This program is a rather simple introduction to packed decimal and packed decimal arithmetic.

First, copy the following Assembler program into a new member of your ASSIGNS PDSE named ASSIGN8.

Be sure the program is surrounded by the correct JCL as before:

PRINT NOGEN

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\* CSCI 360-1/PE1 ASSIGNMENT 8 SPRING 2022 \*

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PAYROLL1 CSECT

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\* STANDARD ENTRY LINKAGE WITH BASE REGISTER R12

\*

STM 14,12,12(13) SAVE REGS IN CALLER'S SAVE AREA

LR 12,15 COPY CSECT ADDR INTO R12

USING PAYROLL1,12 ESTABLISH R12 AS THE BASE REG

LA 14,REGSAVE R14 POINTS TO THIS CSECT'S SAVE AREA

ST 14,8(,13) STORE ADDR OF THIS CSECT'S SAVE AREA

ST 13,4(,14) STORE ADDR OF CALLER'S SAVE AREA

LR 13,14 POINT R13 AT THIS CSECT'S SAVE AREA

\*

\*

\* *Here is where you will write your program.*

\*

\*

\* STANDARD EXIT LINKAGE WITH RC OF 0 IN R15

\*

SR 15,15 R15 = RETURN CODE OF 0

L 13,4(,13) POINT R13 TO CALLER'S SAVE AREA

L 14,12(,13) RESTORE REGISTER 14

LM 0,12,20(13) RESTORE R0 THRU R12

\*

BR 14 RETURN TO CALLER

\*

LTORG

\*

REGSAVE DS 18F PROGRAM'S REGISTER SAVE AREA

\*

\* *Here is where your storage will be defined.*

\*

END PAYROLL1

You will write your source code in between the lines standard entry and exit linkage code provided to you. Of course, you can add variables and other storage declarations immediately following the LTORG provided but DO NOT place them above the 18-fullword caller's register storage area.

Secondly, change the input data member to:

//FT05F001 DD DSN=KC02322.CSCI360.DATASP22(DATA8),DISP=SHR

To assist you, here is the data in the DATA8 member:

WOLFGANG AMADEUS MOZART 123450158002550

RICHARD STRAUSS 234560198007010

AMY BEACH 221320108003120

DAME ETHEL SMYTHE 654650228001590

PETER ILYICH TCHAIKOVSKY 445600232803407

ANTON BRUCKNER 998700228002100

LUDWIG VAN BEETHOVEN 133450158002550

JOHANNES BRAHMS 244560198008001

BELA BARTOK 225320108003120

MAX REGER 114650228001590

SAMUEL BARBER 133600232803407

GIUSEPPE VERDI 998730228002100

JOHANN SEBASTIAN BACH 123420158002550

JOSEPH HAYDN 234520198002001

GEORG FRIEDRICH HANDEL 221310108003120

NIKOLAI RIMSKY-KORSAKOV 443780232803407

EDWARD ELGAR 654110228001590

CLAUDE DEBUSSY 998550228002100

ANTONIN DVORAK 133460158002550

THOMAS TALLIS 244570198006001

RALPH VAUGHAN WILLIAMS 225380108003120

RICHARD WAGNER 114770228001590

FREDERIC CHOPIN 177770232803407

JOAN TOWER 992110228002100

Each of the above input records has the following layout:

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Field** | **Data Type** | **Columns** | **Max. Value** |
| Employee Name | Alphanumeric | 1-25 |  |
| Unused |  | 26-27 |  |
| Employee ID | Alphanumeric | 28-32 |  |
| Hourly Pay Rate | Zoned Decimal | 33-37 | $999.99 (two implied decimal places) |
| Hours Worked | Zoned Decimal | 38-42 | 999.99 (two implied decimal places) |
| Unused |  | 43-80 |  |

As before, read the employee records one at a time using a standard read loop and printing a detail line for each employee so that your output looks like that provided to you in the Assignment 8 folder on Blackboard.

For each employee, move their name to the print line and move their ID to the print line. Make sure your read loop works at this point before moving on.

Next, using only packed decimal instructions, PACK and ED the Hourly Pay Rate into the print line showing the decimal point. Do the same for the Hours Worked.

Finally, calculate the gross pay amount using MP, round it to two decimal places and ED it into the print line showing the decimal point.

The only packed decimal instructions you will need are: PACK, ED, ZAP, MP and SRP.

***You will no longer need to use XDECI or XDECO. DO NOT use them!***

Name your detail line you print for each employee DETAIL and place the following two lines at the top of your read loop:

MVI DETAIL+1,C' '

MVC DETAIL+2(131),DETAIL+1

These two lines set all but the very first byte – the carriage control character – of your 133-byte detail line to spaces to prepare for the next employee information.

Fully document your program as instructed in the **CSCI 360 Coding and Documentation Guidelines** found in Blackboard's Course Documents. Be sure every line of code has adequate line documentation.

Submit your ASSIGN8.txt file on Blackboard as before.