

III. STRUCTURED ASSEMBLY LANGUAGE PROGRAMMING TECHNIQUES

Structured Data Types



Sets

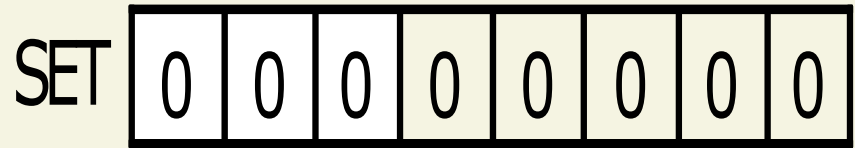
Set Operations:

- Add element
- Remove element
- Is element
- logic instructions/bitwise operations are used to implement set operations



Sets – Add Element

BLUE	equ 1
GREEN	equ 2
PINK	equ 4
YELLOW	equ 8
ORANGE	equ 16
SET	db 0



Sets – Add Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

SET

0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---

PINK

0	0	0	0	0	1	0	0
---	---	---	---	---	---	---	---

OR byte[SET], PINK



Sets – Add Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

SET

0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---

PINK

0	0	0	0	0	1	0	0
---	---	---	---	---	---	---	---

SET

0	0	0	0	0	1	0	0
---	---	---	---	---	---	---	---

OR byte[SET], PINK



Sets – Add Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

SET

0	0	0	0	0	1	0	0
---	---	---	---	---	---	---	---

ORANGE

0	0	0	1	0	0	0	0
---	---	---	---	---	---	---	---

SET

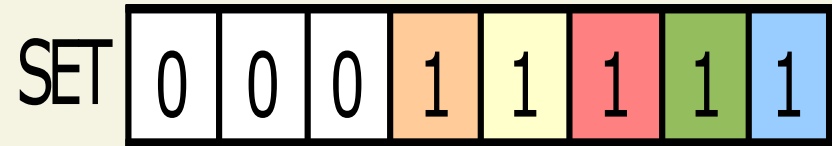
0	0	0	1	0	1	0	0
---	---	---	---	---	---	---	---

OR byte[SET], PINK
OR byte[SET], ORANGE



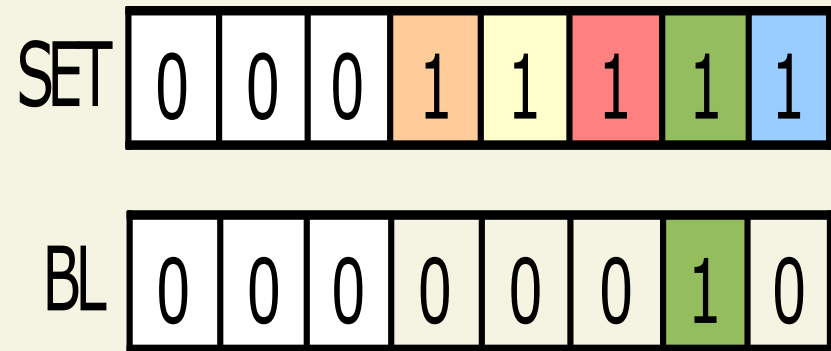
Sets – Remove Element

BLUE	equ 1
GREEN	equ 2
PINK	equ 4
YELLOW	equ 8
ORANGE	equ 16
SET	db 0



Sets – Remove Element

BLUE	equ 1
GREEN	equ 2
PINK	equ 4
YELLOW	equ 8
ORANGE	equ 16
SET	db 0



MOV BL, GREEN



Sets – Remove Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

SET

0	0	0	1	1	1	1	1
---	---	---	---	---	---	---	---

BL

0	0	0	0	0	0	1	0
---	---	---	---	---	---	---	---

new BL

1	1	1	1	1	1	0	1
---	---	---	---	---	---	---	---

MOV BL, GREEN
NOT BL
AND byte[SET], BL



Sets – Remove Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

MOV BL, GREEN
NOT BL
AND byte[SET], BL

SET

0	0	0	1	1	1	1	1
---	---	---	---	---	---	---	---

BL

0	0	0	0	0	0	1	0
---	---	---	---	---	---	---	---

new BL

1	1	1	1	1	1	0	1
---	---	---	---	---	---	---	---

SET

0	0	0	1	1	1	0	1
---	---	---	---	---	---	---	---



Sets – Is Element

BLUE	equ 1
GREEN	equ 2
PINK	equ 4
YELLOW	equ 8
ORANGE	equ 16
SET	db 0

SET

0	0	0	1	1	1	0	1
---	---	---	---	---	---	---	---

YELLOW

0	0	0	0	1	0	0	0
---	---	---	---	---	---	---	---



Sets – Is Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

SET

0	0	0	1	1	1	0	1
---	---	---	---	---	---	---	---

YELLOW

0	0	0	0	1	0	0	0
---	---	---	---	---	---	---	---

test

0	0	0	0	1	0	0	0
---	---	---	---	---	---	---	---

TEST byte[SET], YELLOW
JZ noYellow



Sets – Is Element

BLUE equ 1
GREEN equ 2
PINK equ 4
YELLOW equ 8
ORANGE equ 16
SET db 0

SET

0	0	0	1	1	1	0	1
---	---	---	---	---	---	---	---

GREEN

0	0	0	0	0	0	1	0
---	---	---	---	---	---	---	---

test

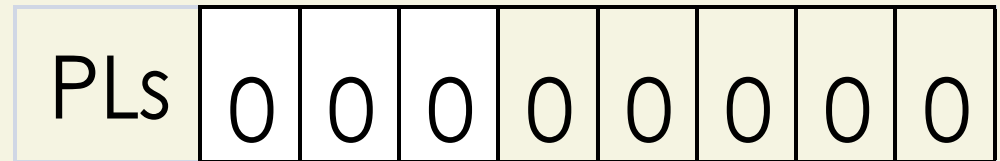
0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---

TEST byte[SET], GREEN
JZ noGreen



Sets – Add Element

ASM	equ 1
C#	equ 2
COBOL	equ 4
JAVA	equ 8
LISP	equ 16
PLs	db 0



Sets – Add Element

ASM	equ 1
C#	equ 2
COBOL	equ 4
JAVA	equ 8
LISP	equ 16
PLs	db 0

PLs	0	0	0	0	0	0	0	0
-----	---	---	---	---	---	---	---	---

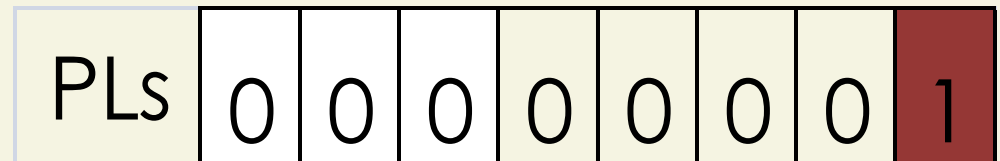
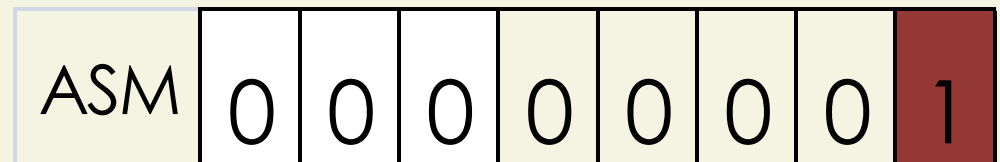
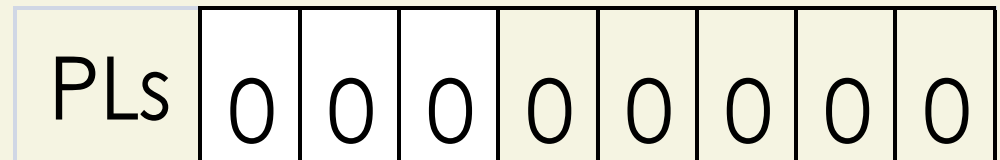
ASM	0	0	0	0	0	0	0	1
-----	---	---	---	---	---	---	---	---

PLs	0	0	0	0	0	0	0	1
-----	---	---	---	---	---	---	---	---



Sets – Add Element

ASM equ 1
C# equ 2
COBOL equ 4
JAVA equ 8
LISP equ 16
PLs db 0

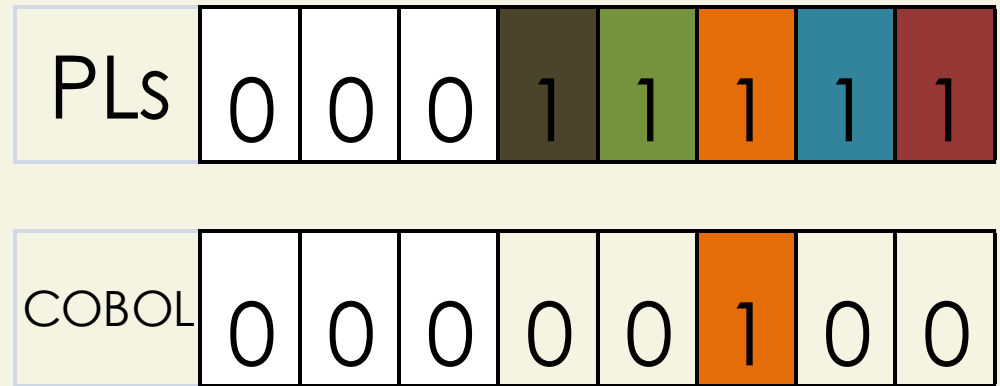


OR byte[PLs], ASM



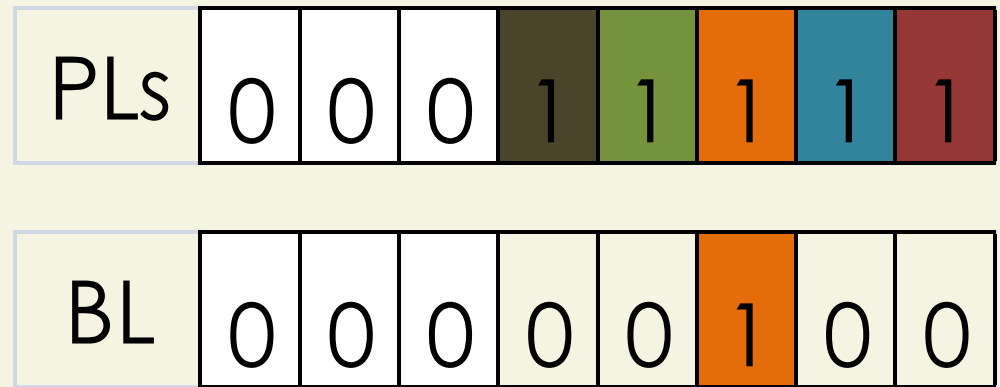
Sets – Remove Element

ASM equ 1
C# equ 2
COBOL equ 4
JAVA equ 8
LISP equ 16
PLs db 0



Sets – Remove Element

ASM equ 1
C# equ 2
COBOL equ 4
JAVA equ 8
LISP equ 16
PLs db 0

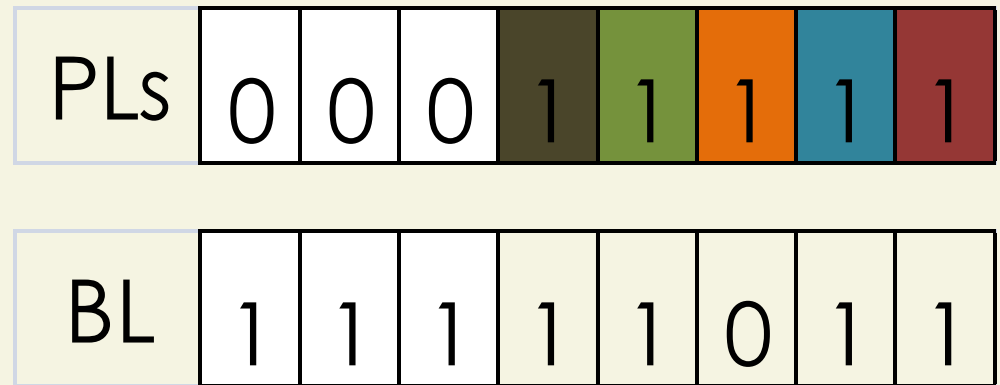


MOV BL, COBOL



Sets – Remove Element

ASM equ 1
C# equ 2
COBOL equ 4
JAVA equ 8
LISP equ 16
PLs db 0



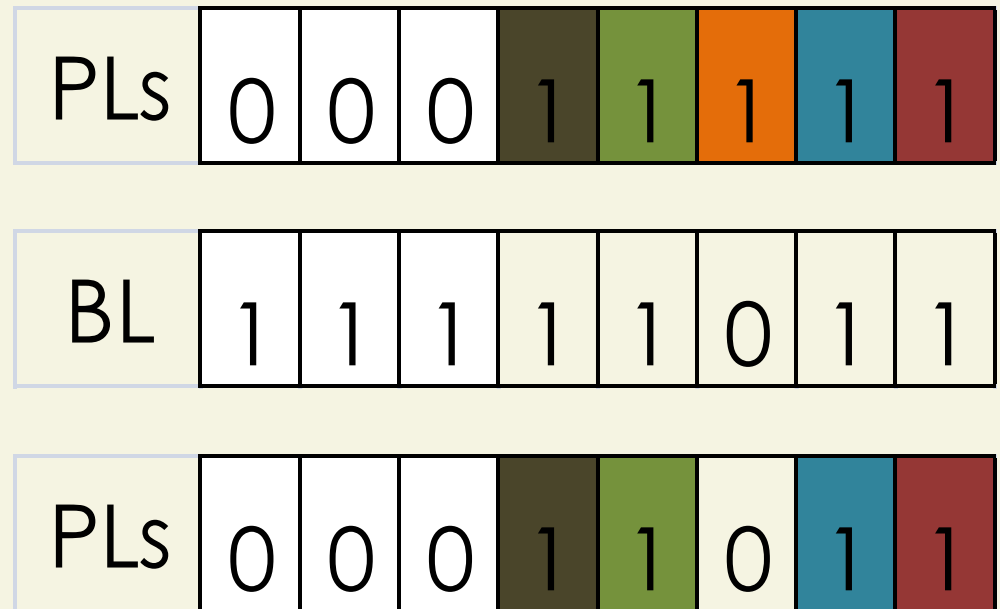
MOV BL, COBOL
NOT BL



Sets – Remove Element

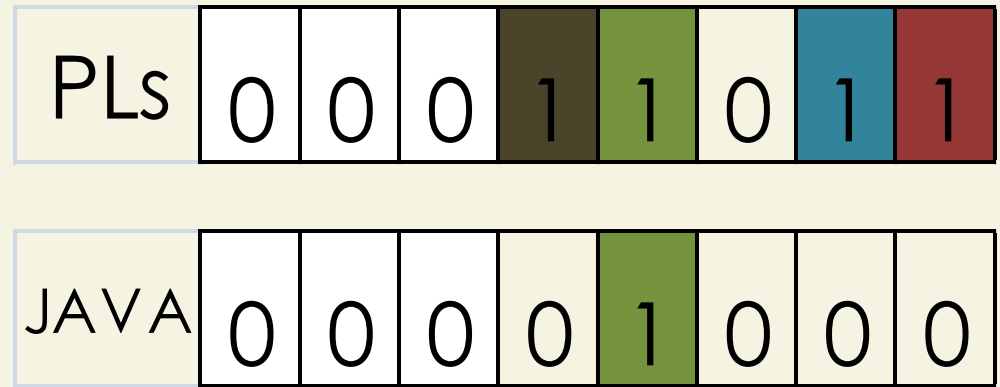
ASM equ 1
C# equ 2
COBOL equ 4
JAVA equ 8
LISP equ 16
PLs db 0

MOV BL, COBOL
NOT BL
AND byte[PLs], BL



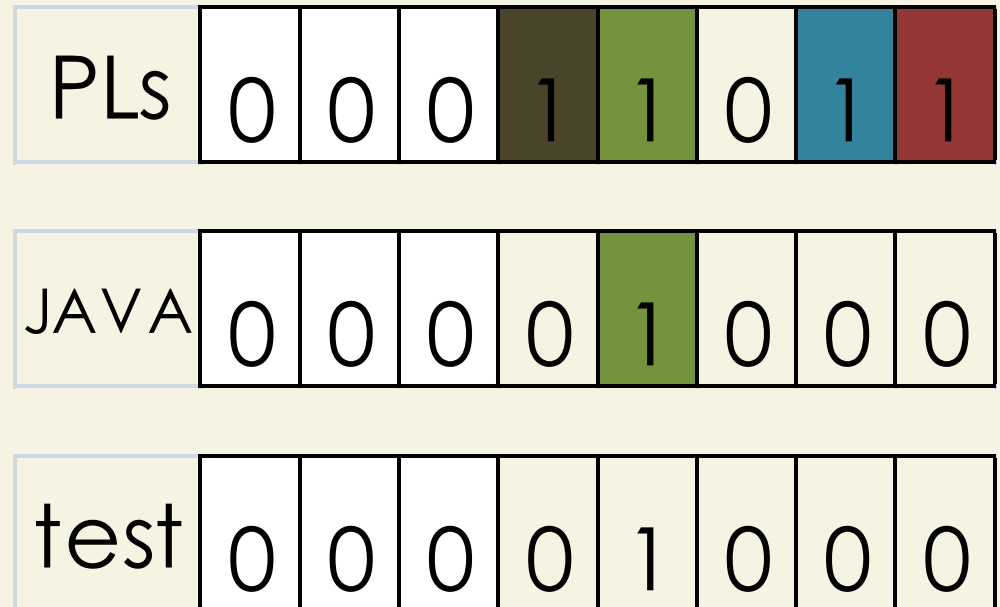
Sets – Is Element

ASM	equ 1
C#	equ 2
COBOL	equ 4
JAVA	equ 8
LISP	equ 16
PLs	db 0



Sets – Is Element

ASM equ 1
C# equ 2
COBOL equ 4
JAVA equ 8
LISP equ 16
PLs db 0



TEST byte[PLs], JAVA
JZ noJava

