



Lectures of Electrical Engineering Department

Subject Title: BRANCH GROUP

Class: 3 E&C

Lecture Contents	Lecture sequences:	First lecture	Instructor Name: Dr. Mohammed Younis
The major contents: <p>1- CONTROL INSTRUCTIONS</p> <p>2-UNCONDITIONAL JMP</p> <p>3- CONDITIONAL JMP</p> <p>SEE MY YOUTUBE CHANNEL FROM</p> <p>https://www.youtube.com/watch?v=aRnxiPzeebk&t=4s</p>			
	The detailed contents:		

FLAG REGISTER TO REMEMBER



- NV - UP - EI - PL - NZ - NA - PO - NC -
- NV - UP - EI - NG - NZ - AC - PE - CY -

JMP BASED ON SINGLE FLAG

Mnemonic	Description	Flags/Registers
JZ	Jump if ZERO	ZF = 1
JE	Jump if EQUAL	ZF = 1
JNZ	Jump if NOT ZERO	ZF = 0
JNE	Jump if NOT EQUAL	ZF = 0
JC	Jump if CARRY	CF = 1
JNC	Jump if NO CARRY	CF = 0
JCXZ	Jump if CX = 0	CX = 0

JMP BASED ON SINGLE FLAG

(CONTINUED)

Mnemonic	Description	Flags/Registers
JS	JUMP IF SIGN (NEGATIVE)	SF = 1
JNS	JUMP IF NOT SIGN (POSITIVE)	SF = 0
JP	Jump if PARITY EVEN	PF = 1
JNP	Jump if PARITY ODD	PF = 0
JO	JUMP IF OVERFLOW	OF = 1
JNO	JUMP IF NO OVERFLOW	OF = 0

JMP ON CONDITION OF UNSIGNED ARITHMATIC

Mnemonic	Description	Flags/Registers
JA	Jump if above op1>op2	CF = 0 and ZF = 0
JNBE	Jump if not below or equal op1 not <= op2	CF = 0 and ZF = 0
JAE	Jump if above or equal op1>=op2	CF = 0
JNB	Jump if not below op1 not <op2	CF = 0
JB	Jump if below op1<op2	CF = 1
JNAE	Jump if not above nor equal op1< op2	CF = 1
JBE	Jump if below or equal op1 <= op2	CF = 1 or ZF = 1
JNA	Jump if not above op1 <= op2	CF = 1 or ZF = 1



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	<p>The major contents:</p> <p>1-CONTROL INSTRUCTIONS</p> <p>2-Signed Arithmetic</p> <p>3 -Call Procedure</p> <p>4- Loop Instructions</p> <p>SEE MY YOUTUBE CHANNEL FROM</p> <p>https://www.youtube.com/watch?v=UYcTs92MJZg&t=2135s</p>																													
<p>The detailed contents:</p> <p style="text-align: center;">JMP ON CONDITION OF SIGNED ARITHMATIC</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Mnemonic</th> <th>Description</th> <th>Flags/Registers</th> </tr> </thead> <tbody> <tr> <td>JG</td> <td>Jump if GREATER op1>op2</td> <td>SF = OF AND ZF = 0</td> </tr> <tr> <td>JNLE</td> <td>Jump if not LESS THAN or equal op1>op2</td> <td>SF = OF AND ZF = 0</td> </tr> <tr> <td>JGE</td> <td>Jump if GREATER THAN or equal op1>=op2</td> <td>SF = OF</td> </tr> <tr> <td>JNL</td> <td>Jump if not LESS THAN op1>=op2</td> <td>SF = OF</td> </tr> <tr> <td>JL</td> <td>Jump if LESS THAN op1<op2</td> <td>SF < OF</td> </tr> <tr> <td>JNGE</td> <td>Jump if not GREATER THAN nor equal op1<op2</td> <td>SF < OF</td> </tr> <tr> <td>JLE</td> <td>Jump if LESS THAN or equal op1 <= op2</td> <td>ZF = 1 OR SF < OF</td> </tr> <tr> <td>JNG</td> <td>Jump if NOT GREATER THAN op1 <= op2</td> <td>ZF = 1 OR SF < OF</td> </tr> </tbody> </table>				Mnemonic	Description	Flags/Registers	JG	Jump if GREATER op1>op2	SF = OF AND ZF = 0	JNLE	Jump if not LESS THAN or equal op1>op2	SF = OF AND ZF = 0	JGE	Jump if GREATER THAN or equal op1>=op2	SF = OF	JNL	Jump if not LESS THAN op1>=op2	SF = OF	JL	Jump if LESS THAN op1<op2	SF < OF	JNGE	Jump if not GREATER THAN nor equal op1<op2	SF < OF	JLE	Jump if LESS THAN or equal op1 <= op2	ZF = 1 OR SF < OF	JNG	Jump if NOT GREATER THAN op1 <= op2	ZF = 1 OR SF < OF
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INST.	OPERANDS	FUNCTION
LOOP		DEC CX THEN JUMP TO LABLE IF CX<>ZERO
LOOPNE		DEC CX THEN JUMP TO LABLE IF CX<>ZERO AND ZF=0
LOOPNZ	LABLE	
LOOPE		DEC CX THEN JUMP TO LABLE IF CX<>ZERO AND ZF=1
LOOPZ		

INST.	OPERANDS	FUNCTION
JMP		JUMP TO LABLE
CALL	LABLE	CALL SUBROUTINE STARTED AT IP=LABLE TOS-2=IP FOR THE NEXT INSTRUCTION
RET	NO OPERAND	IP=TOS IP WILL POINTS TO THE INSTRUCTION NEXT TO CALL

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