

Task 1

Assembly Code:

```
LIST P=16F877
INCLUDE <P16F877.INC>
ORG 0x00
GOTO MAIN

MAIN:
MOVWF 0x07
MOVWF 0x11
MOVWF 0x72
MOVWF 0x21
MOVWF 0xD6
MOVWF 0x22
END
```

Program Memory:

Line	Address	Opcode
1	0000	2801 GOTO 0x1
2	0001	3007 MOVLW 0x7
3	0002	0091 MOVWF 0x11
4	0003	3072 MOVLW 0x72
5	0004	00A1 MOVWF 0x21
6	0005	30D6 MOVLW 0xD6

Special Function Registers:

Address	SFR Name	Hex
000	WREG	0xD6
001	INDF	--
002	TMR0	0x00
003	PCL	0x06
004	STATUS	0x1B
005	FSR	0x00
006	PORTA	0x00
007	PORTB	0x00

File Registers:

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	ASC
000	--	00	06	1B	00	00	00	00	00	00	00	00	00	00	00	00	...
010	00	07	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
020	00	72	D6	00	00	00	00	00	00	00	00	00	00	00	00	00	...
030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
080	--	FF	06	1B	00	3F	FF	FF	07	00	00	00	00	00	00	00	...
090	--	00	FF	00	00	--	--	02	00	--	--	--	--	--	--	00	...
0A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...

Build Log:

```
Warning[203] C:\Users\L236006\Documents\Untitled22.asm
Warning[203] C:\Users\L236006\Documents\Untitled22.asm
Warning[203] C:\Users\L236006\Documents\Untitled22.asm
Warning[203] C:\Users\L236006\Documents\Untitled22.asm
Warning[203] C:\Users\L236006\Documents\Untitled22.asm
Warning[203] C:\Users\L236006\Documents\Untitled22.asm
Warning[205] C:\Users\L236006\Documents\Untitled22.asm
Loaded C:\Users\L236006\Documents\Untitled22.cc
Debug build of project 'C:\Users\L236006\Documents\Untitled22.asm'
Preprocessor symbol '_DEBUG' is defined.
Thu Aug 28 12:04:57 2025
BUILD SUCCEEDED
```

Task 2

Assembly Code:

```
ORG 0x00
GOTO MAIN

MAIN: MOVWF 0x0A
MOVWF 0x20
MOVWF 0x05
MOVWF 0x21
MOVWF 0x20, W
ADDWF 0x21, W
MOVWF 0x23
MOVWF 0x08
SUBWF 0x21, W
MOVWF 0x23
END
```

Program Memory:

Line	Address	Opcode
10	0009	0221 SUBWF 0x21, W
11	000A	00A3 MOVWF 0x23
12	000B	3FFF
13	000C	3FFF
14	000D	3FFF
15	000E	3FFF

Special Function Registers:

Address	SFR Name	Hex
000	WREG	0xFD
001	INDF	--
002	TMR0	0x00
003	PCL	0x0A
004	STATUS	0x18
005	FSR	0x00
006	PORTA	0x00
007	PORTB	0x00
008	PORTC	0x00
009	PORTD	0x00

File Registers:

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	ASCII
000	--	00	0A	18	00	00	00	00	00	00	00	00	00	00	00	00	...
010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
020	0A	05	0F	FD	00	00	00	00	00	00	00	00	00	00	00	00	...
030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
080	--	FF	0A	18	00	3F	FF	FF	07	00	00	00	00	00	00	00	...
090	--	00	FF	00	00	--	--	02	00	--	--	--	--	--	--	00	...
0A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	...
100	--	00	0A	18	00	--	--	--	00	00	00	00	00	00	00	00	...

Build Log:

```
Loaded C:\Users\L236006\Documents\Untitled22.cod.
Debug build of project 'C:\Users\L236006\Documents\Untitled22.asm'
Preprocessor symbol '_DEBUG' is defined.
Thu Aug 28 12:24:35 2025
BUILD SUCCEEDED
```

Task 3

The screenshot displays the MPLAB IDE interface with the following components:

- mp.mcw**: Project file name.
- mp.mcp**: Project name.
- Source Files**: List of files including `Untitled22.asm`.
- Header Files**: List of header files.
- Object Files**: List of object files.
- Library Files**: List of library files.
- Linker Script**: Linker script file.
- Other Files**: Other files in the project.
- Files**: File explorer view.
- Symbols**: Symbol table view.
- Checksum: 0x0619**: Checksum value.
- Program Memory**: Table showing memory addresses and opcodes.
- Special Function Registers**: Table showing SFR names and hex values.
- File Registers**: Table showing file registers and ASCII values.
- Output**: Build output window showing messages.

Assembly Code (Untitled22.asm):

```
INCLUDE <P16F877.INC>

ORG 0x00
GOTO MAIN
MAIN:BSF STATUS, RP0
BCF STATUS, RP1
CLRF TRISB
BCF STATUS, RP0
MOVLW 0x09
MOVWF 0x30
MOVLW 0x07
MOVWF 0x31
MOVLW 0x04
MOVWF 0x32
MOVWF 0x30, W
ADDWF 0x31, W
SUBWF 0x32, W
MOVWF 0x33
INCF 0x33, F
MOVWF 0x33, W
MOVWF 0x34
DECF 0x34, F
MOVF 0x34, W
MOVWF PORTB
END
```

Program Memory:

Line	Address	Opcode
120	0077	3FFF
121	0078	3FFF
122	0079	3FFF
123	007A	3FFF
124	007B	3FFF
125	007C	3FFF

Special Function Registers:

Address	SFR Name	Hex
000	WREG	0x91
001	INDF	--
002	TMR0	0x00
003	PCL	0x78
004	STATUS	0x1B
005	FSR	0x00
006	PORTA	0x00
007	PORTB	0xF4
008	PORTC	0x00
009	PORTD	0x00

File Registers:

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	ASCII
000	--	00	78	1B	00	00	F4	00	00	00	00	00	00	00	00	00	-.X...
010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
020	0A	05	0F	FD	00	00	00	00	00	00	00	00	00	00	00	00	.....
030	09	07	04	F5	F4	00	00	00	00	00	00	00	00	00	00	00	.....
040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
080	--	FF	78	1B	00	3F	00	FF	FF	07	00	00	00	00	--	--	-.X..?
090	--	00	FF	00	00	--	--	02	00	--	--	--	--	--	00	00	.....
0A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
100	--	00	78	1B	00	--	F4	--	--	--	00	00	00	00	00	00	-.X..-?

Output:

```
Build Version Control Find in Files MPLAB SIM

Debug build of project 'C:\Users\236006\Documents\Untitled22.asm'
Preprocessor symbol '_DEBUG' is defined.
Thu Aug 28 12:33:02 2025

Make: The target 'C:\Users\236006\Documents\Untitled22.asm' is not a target.
Executing: 'C:\Program Files (x86)\Microchip\MPASM\bin\MPASM.S'
Warning[205] C:\USERS\236006\DOCUMENTS\UNTITLED22.ASM:1: '_DEBUG' is defined.
Warning[205] C:\USERS\236006\DOCUMENTS\UNTITLED22.ASM:1: '_DEBUG' is defined.
Warning[203] C:\USERS\236006\DOCUMENTS\UNTITLED22.ASM:1: '_DEBUG' is defined.
Warning[203] C:\USERS\236006\DOCUMENTS\UNTITLED22.ASM:1: '_DEBUG' is defined.
```