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HW14: ASM control flow (CS220-06)

As you complete the following conversions from C/C++ code to SPU assembly, be sure only the variables modified in the original code are modified in your code.

1) Given the snippet of C code below, write the equivalent SPU assembly code.

```
if(X == 3) {
      Y++;
}
X += Y;
```

```
load A, !X
load B, !Y

branz A, 3, not_equal
incb

!not_equal
add x, y, 1

stor !X, A
stor !Y, B
```

2) Given the snippet of C code below, write the equivalent SPU assembly code.

```
if(W < 5) {
      W++;
}
else {
      W--;
}
```

```
load A, !W

brage A, 5, else
inca
bra done

!else
deca

!done

stor !W , A
```

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3) Given the snippet of C code below, write the equivalent SPU assembly code.

```
if((Q * 2) - 10 < Q) {
      printf("T");
}
else {
      printf("F");
}
```

```
load A, !Q
rcpy B, A
add B, B, B       #equivalent of *2
sub B, B, 10

brage B, Q, else
print
done

!else
print
!done
```

4) Given the snippet of C code below, write the equivalent SPU assembly code.

```
do {
      K = Y - 2;
      Y -= K;
} while(K > 345);
```

```
load A, !K
load B, !Y

!do
sub A B 2
decb
BRALE A 345 do_end
do

!do_end


stor !K, A
stor !Y, B
```

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5) Given the snippet of C code below, write the equivalent SPU assembly code. Don't forget the true block of the if should be at the bottom of the code.

```
if(E != M && E > 5) {
      E++;
}
else {
      M--;
}
```

```
load A, !E
load B, !M

brane !e_neq_m
else

!e_neq_m
brag A, 5, true_case
else

!else
decb
!done

!true_case
inca

stor !E, A
stor !M, B
```

6) Given the snippet of C code below, write the equivalent SPU assembly code.

```
void times5(int *num) {
      *num *= 5;
      return;
}
```

```
!times5

push A
push B
push C
loadp B
seta 5
add
add
add
add
add

pop C
pop B
pop A
ret
```

```
seta '0'
stor !Q, A
seta !Q
rcpy AR, A
call !times5

sys 0
```

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EXTRA CREDIT

7) Given the snippet of C code below, write the equivalent SPU assembly code. Do not use a variable for “i” as it is temporary. Also, do not use register B… mwah ha HA HAAAAAAA!

```
for(int i = 10; i != 0; i--) {
      // do some stuff
}
```