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| **CS 224, Sp2014**  **Homework #6**  **S07: The C Language** | Name | Section | Score  / 41 |
| Questions: | Answers: | | |
| 1. (6 points) What is the input data type and how is the input different from the other two program’s input?  a) Input to the C preprocessor.  b) Input to the C compiler.  c) Input to the linker. |  | | |
| 2. (11 pts) If **a=6** and **b=9** for each of the given expressions, what are the values of **a** and **b** and the result of the expression after each statement is executed? | |  |  |  |  | | --- | --- | --- | --- | | **Expression** | **a** | **b** | **Result** | | **a | b** |  |  |  | | **a || b** |  |  |  | | **a % b** |  |  |  | | **a %= b** |  |  |  | | **a = b** |  |  |  | | **a = b = 5** |  |  |  | | **a <<= b** |  |  |  | | **a == b** |  |  |  | | **a & b** |  |  |  | | **a && b** |  |  |  | | **a &= b** |  |  |  | | | |
| 3. (4 points) If **i=2** and **j=8** for each of the given statements, what are the values of **i** and **j** after each statement is executed? | |  |  |  | | --- | --- | --- | | **Expression** | **i** | **j** | | **j = ++i;** |  |  | | **j = i + 1;** |  |  | | **i += 1;** |  |  | | **j = i += 1;** |  |  | | | |
| 4. (4 points) Suppose a program contains the two variables x and y.  a) First, write a program segment to exchange x and y using a temporary variable for storage.  b) Rewrite this program segment to exchange x and y WITHOUT using a temporary variable. |  | | |
| 5. (4 points) What will be the output in each of the following **printf** statements?  **int a = 0;**  **int main()**  **{**  **{**  **int a = 5;**  **printf("%d\n", a); // (a)**  **{**  **printf("%d\n", a); // (b)**  **a = 1;**  **}**  **printf("%d\n", a); // (c)**  **}**  **{**  **printf("%d\n", a); // (d)**  **}**  **}** |  | | |
| 6. (4 points) Decipher the following C program and describe what the execution results are. (Note: the pre-processor characters **##** concatenate two strings together.)  **#include "msp430.h"**  **#define cat(x,y) y##x**  **#define dog(x,y) cat(y,x)**  **#define cow(x,y) dog(y,x)**  **cow(dog(i,n),cat(a,m))(){}** |  | | |
| 7. (4 points) What is the length (in bytes) of the following block of variables when compiled by the MSP430 C compiler?  **char char1;**  **unsigned char char2;**  **short short1;**  **unsigned short short2;**  **int int1;**  **unsigned int int2;**  **long long1;**  **unsigned long long2;**  **float float1;**  **double double1;**  **long double double2;** |  | | |
| 8. (4 points) What is the value of **x** after executing segment a? segment b?  **a. if (x = 1)**  **x = 100;**  **b. if (x == 1);**  **x = 100;** |  | | |