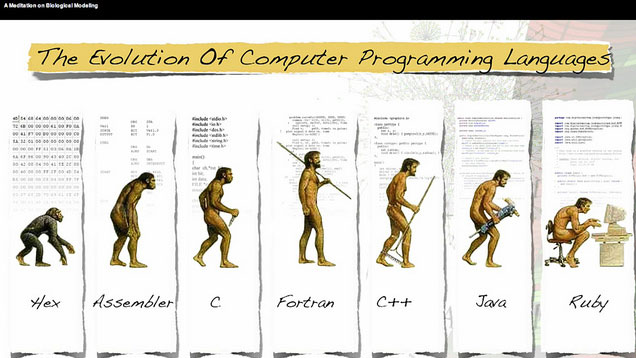
***COP2270***

***M/W***

***Spring 2017-2018***



***Professor: Yassin Raef***

***Anaisy Garcia***

***Chapter 10 Homework/ Exercises***

***One problem per page Please***

***Figure 10-2***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***//***  ***#include <stdio.h>***  ***//***  ***struct card {***  ***char \*face;***  ***char \*suit;***  ***};***  ***int main(void)***  ***{***  ***struct card aCard;***  ***//***  ***aCard.face = "Ace";***  ***aCard.suit = "Spades";***  ***struct card \*cardPtr = &aCard;***  ***printf("%s%s%s\n%s%s%s\n%s%s%s\n", aCard.face, " of ", aCard.suit,***  ***cardPtr->face, " of ", cardPtr->suit,***  ***(\*cardPtr).face, " of ", (\*cardPtr).suit);***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%209.44.40%20PM.png* |

***Figure 10-3***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***#include <stdio.h>***  ***#include <stdlib.h>***  ***#include <time.h>***  ***#define CARDS 52***  ***#define FACES 13***  ***//***  ***struct card {***  ***const char \*face;***  ***const char \*suit;***  ***};***  ***typedef struct card Card;***  ***//***  ***void fillDeck(Card \* const wDeck, const char \* wFace[],***  ***const char \* wSuit[]);***  ***void shuffle(Card \* const wDeck);***  ***void deal(const Card \* const wDeck);***  ***int main(void)***  ***{***  ***Card deck[CARDS];***  ***//***  ***const char \*face[] = { "Ace", "Duece", "Three", "Four", "Five",***  ***"Six", "Seven", "Eight", "Nine", "Ten",***  ***"Jack", "Queen", "King"};***  ***//***  ***const char \*suit[] = { "Hearts", "Diamonds", "Clubs", "Spades"};***  ***srand(time(NULL));***  ***fillDeck(deck, face, suit);***  ***shuffle(deck);***  ***deal(deck);***  ***}***  ***//***  ***void fillDeck(Card \* const wDeck, const char \* wFace[],***  ***const char \* wSuit[])***  ***{***  ***//***  ***for(size\_t i = 0; i < CARDS; ++i) {***  ***wDeck[i].face = wFace[i % FACES];***  ***wDeck[i].suit = wSuit[i / FACES];***  ***}***  ***}***  ***//***  ***void shuffle(Card \* const wDeck)***  ***{***  ***//***  ***for (size\_t i = 0; i < CARDS; ++i) {***  ***size\_t j = rand() % CARDS;***  ***Card temp = wDeck[i];***  ***wDeck[i] = wDeck[j];***  ***wDeck[j] = temp;***  ***}***  ***}***  ***//***  ***void deal(const Card \* const wDeck)***  ***{***  ***//***  ***for (size\_t i = 0; i < CARDS; ++i) {***  ***printf("%5s of %-8s%s", wDeck[i].face , wDeck[i].suit ,***  ***(i + 1) % 4 ? " " : "\n");***  ***}***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%2010.16.54%20PM.png* |

***Figure 10-5***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***#include <stdio.h>***  ***//***  ***union number {***  ***int x;***  ***double y;***  ***};***  ***int main(void)***  ***{***  ***union number value;***  ***value.x = 100;***  ***printf("%s\n%s\n%s\n %d\n\n%s\n %f\n\n\n",***  ***"Put 100 in the integer member",***  ***"and print both members.",***  ***"int:", value.x,***  ***"double:", value.y);***  ***value.y = 100.0;***  ***printf("%s\n%s\n%s\n %d\n\n%s\n %f\n",***  ***"Put 100.0 in the floating member",***  ***"and printf both members.",***  ***"int:", value.x,***  ***"double:", value.y);***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%2010.40.01%20PM.png* |

***Figure 10-7***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***#include <stdio.h>***  ***void displayBits(unsigned int value);***  ***int main(void)***  ***{***  ***unsigned int x;***  ***printf("%s", "Enter a nonnegative int: ");***  ***scanf("%u", &x);***  ***displayBits(x);***  ***}***  ***//***  ***void displayBits(unsigned int value)***  ***{***  ***//***  ***unsigned int displayMask = 1 << 31;***  ***printf("%10u = ", value);***  ***//***  ***for (unsigned int c = 1; c <= 32; ++c) {***  ***putchar(value & displayMask ? '1' : '0');***  ***value <<= 1;***  ***if (c % 8 == 0) {***  ***putchar(' ');***  ***}***  ***}***  ***putchar('\n');***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%2010.50.34%20PM.png* |

***Figure 10-9***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***//***  ***#include <stdio.h>***  ***void displayBits(unsigned int value);***  ***int main(void)***  ***{***  ***//***  ***unsigned int number1 = 65535;***  ***unsigned int mask = 1;***  ***puts("The result of combining the following");***  ***displayBits(number1);***  ***displayBits(mask);***  ***puts("using the bitwise AND operator & is");***  ***displayBits(number1 & mask);***  ***//***  ***number1 = 15;***  ***unsigned int setBits = 241;***  ***puts("\nThe result of combining the following");***  ***displayBits(number1);***  ***displayBits(setBits);***  ***puts("using the bitwise inclusive OR operator | is");***  ***displayBits(number1 | setBits);***  ***//***  ***number1 = 139;***  ***unsigned int number2 = 241;***  ***puts("\nThe result of combining the following");***  ***displayBits(number1);***  ***displayBits(number2);***  ***puts("using the bitwise inclusive OR operator | is");***  ***displayBits(number1 ^ number2);***  ***//***  ***number1 = 21845;***  ***puts("\nThe one's complement of");***  ***displayBits(number1);***  ***puts("is");***  ***displayBits(~number1);***  ***}***  ***//***  ***void displayBits(unsigned int value)***  ***{***  ***//***  ***unsigned int displayMask = 1 << 31;***  ***printf("%10u = ", value);***  ***//***  ***for (unsigned int c = 1; c <= 32; ++c) {***  ***putchar(value & displayMask ? '1' : '0');***  ***value <<= 1;***  ***if (c % 8 == 0) {***  ***putchar(' ');***  ***}***  ***}***  ***putchar('\n');***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%2011.10.27%20PM.png* |

***Figure 10-13***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***#include <stdio.h>***  ***void displayBits(unsigned int value);***  ***int main(void)***  ***{***  ***unsigned int number1 = 960;***  ***//***  ***puts("\nThe result of left shifting");***  ***displayBits(number1);***  ***puts("8 bit positions using the left shift operator << is");***  ***displayBits(number1 << 8);***  ***//***  ***puts("\nThe result of right shifting");***  ***displayBits(number1);***  ***puts("8 bit positions using the left shift operator >> is");***  ***displayBits(number1 >> 8);***  ***}***  ***//***  ***void displayBits(unsigned int value)***  ***{***  ***//***  ***unsigned int displayMask = 1 << 31;***  ***printf("%7u = ", value);***  ***//***  ***for (unsigned int c = 1; c <= 32; ++c) {***  ***putchar(value & displayMask ? '1' : '0');***  ***value <<= 1;***  ***if (c % 8 == 0) {***  ***putchar(' ');***  ***}***  ***}***  ***putchar('\n');***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%2011.21.00%20PM.png* |

***Figure 10-16***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***#include <stdio.h>***  ***#define CARDS 52***  ***//***  ***struct bitCard {***  ***unsigned int face : 4;***  ***unsigned int suit : 2;***  ***unsigned int color : 1;***  ***};***  ***typedef struct bitCard Card;***  ***void fillDeck(Card \* const wDeck);***  ***void deal(const Card \* const wDeck);***  ***int main(void)***  ***{***  ***Card deck[CARDS];***  ***fillDeck(deck);***  ***puts("Card values 0-12 corresponding to Ace through King");***  ***puts("Suit values 0-3 corresponding Hearts, Diamonds, Clubs and Spades");***  ***puts("Color values 0-1 corresponding to red and black\n");***  ***deal(deck);***  ***}***  ***//***  ***void fillDeck(Card \* const wDeck)***  ***{***  ***//***  ***for (size\_t i = 0; i < CARDS; ++i) {***  ***wDeck[i].face = i % (CARDS / 4);***  ***wDeck[i].suit = i / (CARDS / 4);***  ***wDeck[i].color = i / (CARDS / 2);***  ***}***  ***}***  ***//***  ***//***  ***void deal(const Card \* const wDeck)***  ***{***  ***printf("%-6s%-6s%-15s%-6s%-6s%s\n", "Card", "Suit", "Color",***  ***"Card", "Suit", "Color");***  ***//***  ***for (size\_t k1 = 0, k2 = k1 + 26; k1 < CARDS / 2; ++k1, ++k2) {***  ***printf("Card:%3d Suit:%2d Color:%2d ",***  ***wDeck[k1].face, wDeck[k1].suit, wDeck[k1].color);***  ***printf("Card:%3d Suit:%2d Color:%2d\n",***  ***wDeck[k2].face, wDeck[k2].suit, wDeck[k2].color);***  ***}***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-21%20at%2011.52.55%20PM.png* |

***Figure 10-18***

|  |
| --- |
| ***Commands*** |
| ***// Fig***  ***//***  ***#include <stdio.h>***  ***//***  ***enum months {***  ***JAN = 1, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC***  ***};***  ***int main(void)***  ***{***  ***//***  ***const char \*monthName[] = { "", "January", "Febuary", "March",***  ***"April", "May", "June", "July", "August", "September", "October",***  ***"November", "December" };***  ***//***  ***for (enum months month = JAN; month <= DEC; ++month) {***  ***printf("%2d%11s\n", month, monthName[month]);***  ***}***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../Screen%20Shot%202018-04-22%20at%2012.12.54%20AM.png* |

***Figure 10-7***

|  |
| --- |
| ***Commands*** |
| ***#include <stdio.h>***  ***#include <stdlib.h>***  ***#include <time.h>***  ***struct bitCard {***  ***unsigned face : 4;***  ***unsigned suit : 2;***  ***unsigned color : 1;***  ***};***  ***typedef struct bitCard Card;***  ***void fillDeck(Card \*wDeck);***  ***void shuffle(Card \*wDeck);***  ***void deal(Card \*wDeck2);***  ***int main(void)***  ***{***  ***Card deck[52];***  ***srand(time(NULL));***  ***fillDeck(deck);***  ***shuffle(deck);***  ***deal(deck);***  ***return 0;***  ***}***  ***void fillDeck(Card \*wDeck)***  ***{***  ***int i;***  ***for (i = 0; i <= 51; i++) {***  ***wDeck[i].face = i % 13;***  ***wDeck[i].suit = i / 13;***  ***wDeck[i].color = i / 26;***  ***}***  ***}***  ***void shuffle(Card \*wDeck)***  ***{***  ***int i;***  ***int j;***  ***Card temp;***  ***for (i = 0; i <= 51; i++) {***  ***j = rand() % 52;***  ***if (i != j) {***  ***temp = wDeck[i];***  ***wDeck[i] = wDeck[j];***  ***wDeck[j] = temp;***  ***}***  ***}***  ***}***  ***void deal(Card \*wDeck2)***  ***{***  ***char \*face[] = {"Ace", "Deuce", "Three", "Four", "Five", "Six",***  ***"Seven", "Eight", "Nine", "Ten", "Jack", "Queen", "King"};***  ***char \*suit[] = { "Hearts", "Diamonds", "Clubs", "Spades"};***  ***char \*color[] = { "Red", "Black"};***  ***int i;***  ***for (i = 0; i <= 51; i++) {***  ***printf("%5s: %5s of %-8s", color[ wDeck2[i].color],***  ***face[wDeck2[i].face], suit[wDeck2[i].suit]);***  ***putchar((i + 1) % 2 ? '\t' : '\n');***  ***}***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../../../../../../Desktop/Screen%20Shot%202018-04-22%20at%208.14* |

***Figure 10-10***

|  |
| --- |
| ***Commands*** |
| ***#include <stdio.h>***  ***void displayBits(unsigned value);***  ***int main(void)***  ***{***  ***unsigned val;***  ***printf("Enter an integer: ");***  ***scanf("%u", &val);***  ***printf("%u before right shifting 4 bits is:\n", val);***  ***displayBits(val);***  ***printf("%u after right shifting 4 bits is:\n", val);***  ***displayBits(val >> 4);***  ***return 0;***  ***}***  ***void displayBits(unsigned value)***  ***{***  ***unsigned c;***  ***unsigned displayMask = 1 << 15;***  ***printf("%7u = ", value);***  ***for ( c = 1; c <= 16; c++ ) {***  ***value & displayMask ? putchar( '1' ) : putchar( '0' );***  ***value <<= 1;***  ***if (c % 8 == 0) {***  ***putchar(' ');***  ***}***  ***}***  ***putchar('\n');***  ***}*** |

|  |
| --- |
| ***Output*** |
| *../../../../../../Desktop/Screen%20Shot%202018-04-22%20at%208.27* |