[Name] Hieu Trung Tran

[Code] 2040

**C Programming Exercise**

**Ex1.1**

pData = &data01[6];

**Ex1.2**

(1)

[a] = 6668

[b] = 6648

[c] = 5

(2)

[a] = 6686

[b] = 6681

[c] = 5

**Ex1.3**

Result: 35

**Ex1.4**

Magic01(&a, &b);

**Ex2.1**

**(1)**

[a] char c

[b] \*(data + i)

[c] \*(data + i)

[d] data01

**(2)**

|  |
| --- |
| void changeString(char \*data)  {  int i;  for (i = 0; (\*(data +i)) != '\0'; i++)  {  ***if ((\*(data + i)>=97)&&(\*(data + i)<=122))***  ***printf("%c", StoC(\*(data + i)));***  ***else***  ***printf("%c", \*(data + i));***  }  printf("\n");  } |

**Ex2.2**

|  |
| --- |
| int my\_strlen (char\* str)  {  int i=0;  int count=0;  for (i=0; \*(str + i) != '\0'; i++)  {  count++;  }  return count;  } |

**Ex2.3**

|  |
| --- |
| char \*my\_strstr(char \*str, char \*substr)  {  int len = strlen(substr);  char \*ref = substr;  while (\*str && \*ref)  {  if (\*str++ == \*ref)  {  ref++;  }  if (!\*ref)  {  return (str - len);  }  if (len == (ref - substr))  {  ref = substr;  }  }  return NULL;  } |

**Ex3**

**(1)**

[a] struct fig f

[b] \*pFunc[f.kind]

[c] f.height

[d] f.width

[e] f1

**(2)**

|  |
| --- |
| /\* Define prototype \*/  int circle (int , int);  int triangle( int , int);  int rectangle( int , int);  int oval (int, int);  int (\*pFunc[4]) (int, int) = {circle, triangle, rectangle, oval};  struct fig {  int kind; /\* Circle=0, Triangle=1, Rectangle=2, Oval =3 \*/  int height; /\* Height of figure \*/  int width; /\* Width of figure \*/  } ;  int getAreaSize2(struct fig f)  {  int s;  s = (\*pFunc[f.kind])(f.height,f.width);  return s;  }  int circle (int height, int nouse)  {  return ( (height/2) \* (height/2) \* 3 );  }  int triangle (int height, int width)  {  return ( height \* width / 2 );  }  int rectangle (int height, int width)  {  return (height \* width );  }  int oval (int height, int width)  {  return (height/2 \* width/2 \* 3);  }  void main()  {  struct fig f1;  int k,h,w;  printf("Input figure kind:");  scanf("%d", &k);  printf("Input height width:");  scanf("%d %d", &h, &w);  f1.kind = k;  f1.height = h;  f1.width = w;  printf("%d\n", getAreaSize2(f1));  } |

**(3)**

|  |
| --- |
| /\* Define prototype \*/  int circle (int , int);  int rectangle( int , int);  int square (int, int);  int (\*pFunc[4]) (int, int) = {circle, rectangle, square};  struct fig {  int kind; /\* Circle=0, Rectangle=1, Square = 2 \*/  int height; /\* Height of figure \*/  int width; /\* Width of figure \*/  } ;  int getCircumference(struct fig \*f)  {  int s;  s = (\*pFunc[f->kind])(f->height,f->width);  return s;  }  int circle (int height, int nouse)  {  return (height \* 3);  }  int rectangle (int height, int width)  {  return ((height + width) \* 2);  }  int square (int height, int width)  {  return (height \* 4);  }  void main()  {  struct fig f1;  int k,h,w;  printf("0 = circle,\n1 = rectangle,\n2 = square\n");  printf("Input figure kind:");  scanf("%d", &k);  printf("Input height width:");  scanf("%d %d", &h, &w);  f1.kind = k;  f1.height = h;  f1.width = w;  printf("%d\n", getCircumference(&f1));  } |

**Ex4.1**

|  |
| --- |
|  |

**Ex4.2**

|  |
| --- |
|  |

**Ex5**

|  |
| --- |
| *#define PORT\_LED (volatile unsigned char \*) 0x003E0*  void main(void)  {  \*PORT\_LED=0b10101010;  \*PORT\_LED=0b00111100;  } |

**Ex6**

|  |
| --- |
| #include <stdio.h>  // (1) Make subroutines  int sub1(int (\*fp)(int))  {         return (fp(1))\*(fp(2));  }  int sub2(int n)  {         return n%2;  }  // (1) Make the main routine  int main(void)  {         int a, b;         // (2) Declare function pointer in the main routine         int(\*p)(int);         p = &sub2;         // (3) Call subroutine1 which has function pointer argument         a = sub1(p);         // (4) Call subroutine2 by function pointer         b = (\*p)(2);         return 0;  } |